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For the Farmers' Register.

ON DRAINING.

Addressed to Young Farmers.

No. II.

[Continued from p. 390, No. 7.]

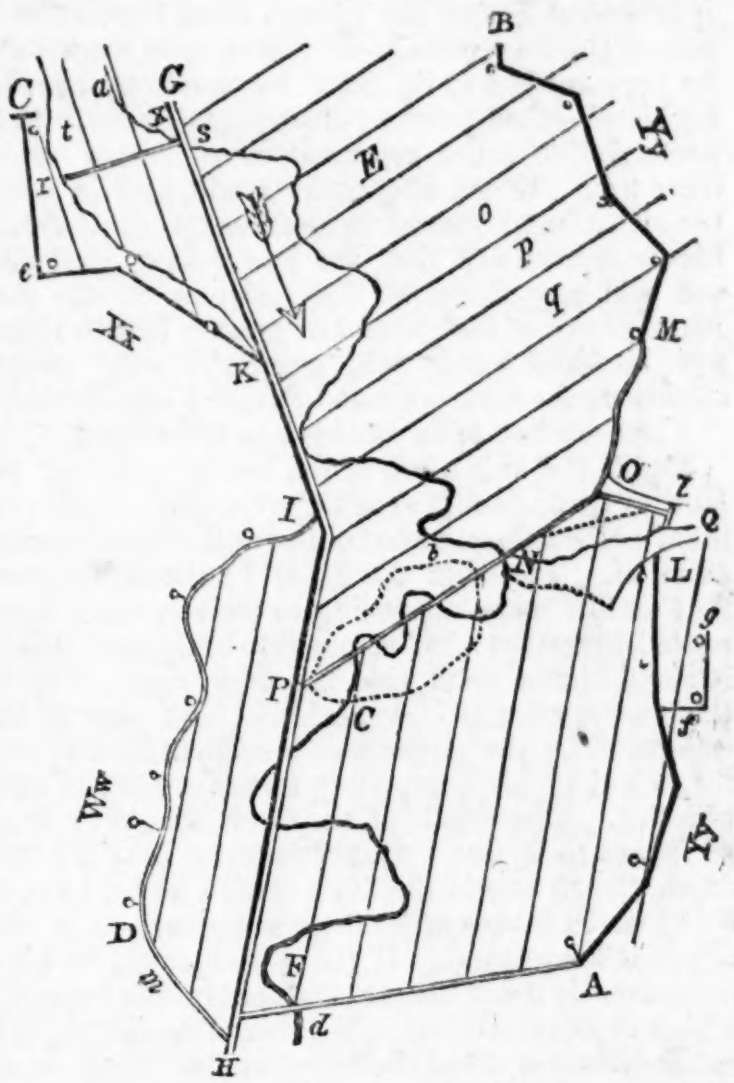
Having seen in more than one communication to the Farmers' Register that my former observations on draining have not only attracted some attention, but have served also to draw forth others, I willingly resume the subject, and offer the continuation which has been thus invited. It is particularly gratifying to me that my former labor in this cause, if of no other value, has brought forward Mr. Harper, (p. 518, No. 9,) in opposition to the legal obstructions to drainage. The facts which he has there offered, are striking examples of the evil which I had charged upon our existing laws, and our whole race of law-makers. I was not aware of the existence of the particular facts connected with the Deep Creek drainage—nor that any other individual had attempted to expose this enormous and unjust part of our legal policy—by which, a government which professes to be most friendly to (what are called) "internal improvements," and which certainly spends vast sums for such objects, should at the same time, and in the strongest manner, in effect, *forbid* the drainage of swamps, though these works are the most necessary, and would be the most cheap and profitable of all internal improvements.

My former communication treated of open drains for surface or rain water, and of carriers of principal streams. It now remains to consider *side ditches*, open or covered, to receive water from springs—cross ditches—and the mode of cultivation, as aiding or opposing complete drainage.

Owing to the peculiar texture of the subsoils, and to the inclination of the different strata, some bottom lands are nearly or quite free from springs oozing out of the adjacent higher land; and are consequently not subject to the heaviest tax in drainage, the keeping of side ditches open, and in good order. But generally, in Lower Virginia, springs and oozy places are so frequent along the foot of the surrounding hills, that continuous side ditches can seldom be dispensed with These springs generally burst out from the high land about as low as the level of the lowground—but often, also, at great erand at various elevations, which adds greatly to the difficulty of diverting the water.

Let us suppose the lowground, or bottom land, similar in general character to the example offered in my former communication; and the main carrier, &c. in the course of execution, as was there advised. And to make my remarks more plain, the annexed plan of a piece of lowground will serve to show examples of all the operations described.

B G C the upper, and A H D the lower extremity of a piece of alluvial land or bottom, supposed to be drained as in the annexed description.



In the plan above, the former crooked bed of the stream, *a s b* C *d*, is supposed to be laid dry, by the main stream having been turned into the straighter artificial channel, or main carrier, G I H, as described at page 394, No. 7.

K I is part of the main carrier, keeping along the side of the highland, so as to serve as a side ditch.

O P, A H, and *m* H, cross ditches leading into the main carrier.

r s, a "grip," or shallow dry cross ditch, to prevent rain water remaining in the under furrows, between the beds *r*, *t*, *a* and *x*.

The crooked line between the letters C *t r* K, represents the line of division between the flat alluvial land, and the sloping and higher, (though wet) land adjoining. The plan of drainage, and cultivation, serve to add this oozy slope to the bottom.

o, *p*, *f*, &c. wide beds, made after the land has been completely subjected to the plough.

Ww steep hill side covered with trees.

Xx hill side under cultivation.

Yy gentle slopes, arable.

The references to other parts, will be made as they are described, in the course of the following observations.

The first operation required in side ditching, is to cut off the springs which burst or ooze out of the adjacent high land; and which should be done either by open, or by covered drains, according to existing circumstances. If the slopes bordering on any part of the lowground, are in wood, or are not intended for cultivation, and therefore not

likely to fill the ditch by the washing of their loose soil, an open ditch will be the cheapest, and best. Or if the springs burst out at different elevations, and very irregularly, an open ditch below the whole must be the course adopted in preference, or unusually troublesome and difficult covered drains must be made instead. But where it is desirable that the plough should cross the limit of the lowground—or where open drains will be very subject to be filled by washing from the highland—then covered drains are decidedly to be preferred, if other circumstances do not forbid their use. When effectually made, and in suitable situations, covered drains are the most valuable improvement that we can adopt, that does not add any thing to the richness of the soil. Most pieces of lowground of greater length than a few hundred yards will generally offer proper situations for both open and covered side ditches.

First—when open ditches are to be used.

Begin the side ditch at the lowest point of the land to be drained, (as at D,) giving it, at a convenient place below, a good outlet to the main stream, as at H. The side ditch (D I) should be from $2\frac{1}{2}$ to 4 feet wide, according to the stream it is expected to convey. If exposed to hasty land floods, it should have good size, however small may be the permanent rill. A ditch of 4 feet may be left uninjured by the passage of a sudden flood of water, which would completely choke a ditch of only two feet. The depth of the ditch should be from 18 inches to 2 feet. But whatever may be the depth, the stream in the ditch should be kept lower by 12 or 18 inches at least than the surface of the adjacent lowground. If the water could be kept permanently 2 feet deeper, it would be the better—which object is attainable in covered drains, though not in the open, from their continually filling—and the more rapidly in proportion to their depth. The ditch should be as narrow at bottom as possible, so as to give room for the ordinary stream. The wider a ditch is at bottom, of course the steeper must be the sides, and the more apt to fall in. If the running water does not completely cover the bottom, grass will grow on the naked places, and help to choke the passage. The open side ditch should generally follow the dividing line between the high and lowland (as from D to I)—but that course should not be adhered to so strictly, as to give it any sharp turns, or a very crooked course. Angles should never be made—make curves instead, and the more gradual the change of direction, the better will the ditch discharge, and avoid being filled with earth. The most material difficulties in side ditches are in passing beds of quicksand, and the high points of sand washed in by highland torrents. The quicksand will sometimes fill some part of a ditch, by the running in of the sides, until it is thrice its desired width, without getting a foot deep. This evil generally stops, after causing this additional labor: but if not, and the spot cannot be avoided by a change of direction, the head of that side ditch must stop there, and another be commenced for the stretch above, with an outlet through a cross drain to the main stream. Each of the points of washed earth will also generally require the head of the side ditch to end there, or rather to receive the water furnished from the ravine, or land stream. No farther directions are needed for the higher stretches of side ditch, unless it be that the outlets (as each must have one) should be through cross drains cut in the direction most convenient for the cultivation of the land. The bottom of the side ditches, throughout, should be so graduated (if possible) as to give every where a descent to the stream. In the plan, the open side ditch M O, to avoid the high point of sand Q N, and the torrents of rain water poured down from the ravine Q, is emptied above through the cross ditch O P: and that cross ditch is made to pass through the lowest part of the land *b* C, not only to drain it, but to raise it, by the deposites of earth, which will continue to be washed down the ravine Q.

Where a side drain is intended to be covered, it must be dug at least 30 inches deep, and circumstances will often require parts of it to be 4 or even 5 feet at particular places. For a covered drain to serve the purpose in view, it must not only take in every spring in its course, but must cut them off where they are 18 inches or more below the surface. If they were cut into near to the surface of the earth, instead of descending into the ditch, after its being finished, the spring would probably flow across as before, over the covering of the drain. Hence a drain, intended to be covered, must generally be dug on a higher line, or farther into the highland, than would be suitable for an open side ditch. The springs which sometimes burst out at various elevations on a hill side, may be cut off by the covered drain passing above all (as K *e* C.) But if that elevation would be too great to be continued, then a short branch of the drain, (as *f g*) must take in the higher springs, while the principal drain proceeds on a lower level (L *f* A.) Sometimes a drain cut upon a high level will take off springs which previously burst out 50 yards distant, and 10 or 15 feet lower. A stretch of covered drain must be made to terminate whenever it is about to pass a stream, which it cannot take in at its source. A stream, from a spring of this kind, must be sent to the main stream, by an open cross drain—which may serve as an outlet for another stretch of covered drain, to be carried still higher up the side of the lowground. Each stretch of covered drain should be begun on as low a level as will allow sufficient depth, and cut off all the springs—and gradually rise to the highest level required by any hill side spring. After fixing on the two extremities for a covered drain, and the intermediate points required by oozing water, it will save much trouble, and many mistakes, to use a *rafter level*, to mark either a horizontal line, or a gradual slope; and by that, to keep the line of the bottom of the drain always ascending. As a covered drain must never receive any water but the springs taken in, and will not be affected by surface water, there can be no washing of its sides or bottom, if the bottom is properly graduated—that is, having throughout sufficient descent, and not too much at any one place. There will then be no danger, and (on the contrary) a great convenience when filling or covering the drain, to dig it throughout in straight courses: and when a change of direction is necessary, let it be an angle, and not a curve, (as in A Y L, M B, and K *e* C.)

Whenever a stretch of side drain has reached its upper termination, and it is evident that it has cut off all the springs, the sooner it is filled, the better. If its effect is doubtful, it should stand longer, to try its operation.

Open side ditches, unless having considerable descent, and carrying a permanent and bold stream, will be continually filling, and will require cleaning out frequently. Unless the stream has enough force to carry through the various obstructions, every fallen leaf, or spire of dead grass, will help to form a collection at some shallow place, and to hold the floating mud, until a low dike is formed, that stops the sediment until it is overtopped. This kind of operation is slowly going on always, in the best constructed side ditches: but there are other modes by which they are caused to fill much more quickly, but which may be avoided by a judicious drainer. Some of these errors are so gross and founded on such a degree of stupidity that it may be thought useless to mention them—yet nevertheless it will require continued supervision to prevent laborers (and also many overseers) being guilty of them. Bushes and litter cleared from the cultivated ground, are in this way often thrown either into the side ditches, or the main carrier, or laid upon the edge to be thrown in by the first flood, or even by more frequent and slight causes. A small bough, or a strong bunch of long grass, may thus more effectually choke a ditch than would 20 cart loads of pure earth alone. Another more sudden cause of the filling of a side ditch, is its receiving a highland stream which is swelled greatly by rains, and which rushes into the ditch at right angles, or nearly so. A torrent of water thus directed, will not change its violent course, to follow the ditch, but will beat against the bank, and soon force a way into the lowground—its channel forming a dike across the ditch, made of the sand and gravel washed from the highland, and on which the stream rushes over, by the straightest course. Such torrents from the highland ought not to be admitted into side ditches, unless by a very gradual curving course.

It is on account of the many things that injure open side ditches, and the great obstruction they offer to cultivation, that covered drains are to be preferred, whenever circumstances permit them to be made easily, and to operate well. The proper location and courses of covered side drains have been already stated, and I will now proceed to direct the execution of the work.

Few as have been the attempts at hollow draining in this country, many have been misguided as to the manner, by endeavoring to follow the English practice, without considering the difference of circumstances. The close and tenacious soils and subsoils, and cold and dripping climate of England, and still more of Scotland, render hollow draining there very often essential, merely to take off surface or rain water—which is rarely needed, and never practised, in our dryer and warmer climate, and on more open soils. It is no unusual thing in Scotland for a field which is cultivated in beds of 12 to 20 feet wide, to have a good covered drain under the middle of every bed, which, in addition to as many open drains formed by the intervening water furrows, are all required to keep the land dry enough for profitable tillage, though perhaps not the least exposed to spring water. The adhesiveness and regular texture of the soils that require such draining, serve to render the digging and filling much easier, than if sand, gravel, clay and quicksand were all found—and all these changes springy slopes will generally show. But the materials for filling are scarce and costly in Europe, compared to those which our woods plentifully furnish. Yet I have known stones most laboriously collected to fill drains, and wheat straw then laid on to prevent (but without success) the covering sandy soil from falling in, because those were materials (from necessity) used in Britain. Besides, a small channel made two feet under the surface in a close clay, will keep open with almost any kind of filling material, or even with none. But through sand, with no more care to preserve an open channel, it would be choked in a few months. We will never be required to hollow drain for the same reasons as most British farmers generally are, nor to resort to similar materials for filling—but the hollow drains required for our lands are far more difficult to make, and to keep in order.

Drains intended to be covered should be dug as narrow as possible, so as to give enough room to the laborers—and the bottom ought not to be more than ten inches wide. Of course it should be deep enough to cut through, and diverts the natural course of every spring in the route—and if that is not done, the object in view will not be attained. The springs must also fall in not nearer than 18 inches of the top of the ditch, or there will be danger of their being not confined to the new channel, and perhaps they may at a future time be tapped by the plough. The bottom of the ditch should have a descent throughout, and that so graduated, as to be as regular as the shape of the land will admit. If this should not be attended to, in the course of time, the slightest rill of water will wash enough earth from the steepest sloped parts of the bottom, to fill and choke the hollows at the level places. But if a slope, neither too steep in some places, nor too level in others, be preserved throughout the whole stretch, any small washings will be brought through, and thrown out at the issue of the covered drain.

As it is very important that a drain should be filled as soon as it is ready, to guard against caving, (as oozy banks will surely do,) or being injured by a fall of rain, the best material for filling will be such as can be used most expeditiously, so as that the work shall be well performed. For this purpose, if there is much filling to be done, there should be previously prepared a number of boards of about a half inch thickness, rived out of round blocks sawed off ten inches long, from a tree of any convenient size. Very little care or trouble is required to get out these boards, and any dimensions almost will serve, provided the length is uniform; and that should be the least that the width of the ditch at bottom will receive. The ditch having reached the highest spring, and its highest termination, and being sufficiently deep at the upper end, the laying down of the filling materials may be begun, though the deepening, graduating and cleaning out of lower parts of the ditch may still be going on. Two new fence rails of green timber, say from two to four inches through, are laid parallel on the bottom of the ditch, and very near to each other. They are to form the sides of the pipe, or passage for the stream, and a very narrow space will generally afford enough room. Across these rails the ten inch boards should be laid, side to side, or lapping sometimes to prevent openings of more than half an inch wide. A little litter, such as dead grass, green pine tops, &c. should be thrown on the boards, and then as much of the earth returned as will cover them a foot

deep, which is to be well and closely beaten down with heavy wooden rammers, before the balance is thrown in. If any parts of the ditch are more than thirty inches deep, the earth should be there thrown on at three different times, and each layer well rammed. The different operations of laying down the rails, end to end—then the boards on the rails—pulling in the earth, and ramming it—may all be going on together: and if the ditch has been properly dug, the filling will be so quickly done as soon to secure the work from accidents. Care should be had that no hollow is left over the ditch, in which the next heavy rain may settle, and thence find a passage down the side of the digging into the pipe. If, in this or any other manner, the rain, or surface water, finds its way into the pipe, it will be soon choked with earth washed down, and the whole work ruined. Hence the necessity of good ramming. A single spot left unfinished by carelessness, may serve to destroy a drain, perfect in all other respects.

But however well the earth may be rammed, cracks will afterwards be apt to show along the sides of the ditch, and through which, rain water may possibly penetrate to the pipe. But if the land is dug up, or ploughed, soon after the drain is completed, and cultivated that year, there will be no such cracks allowed to form, and no danger from that source.

This kind of filling, without any variation, suits when the springs come in at or near the bottom of the ditch. But when a spring, or an ooze, comes in ten or twelve inches above the timber pipe, some open materials should be laid over (stone, gravel, or wood,) so as to lead the water down to the pipe, and not let it flow across, in its old course. The less of the open work, however, that will serve, will be most durable: for soon or late, the perishable materials must rot, and then a large open channel would certainly be choked by the falling in of the covering earth, when a very small channel would remain open like the natural passage of a spring under the earth. I have now a covered drain which was twelve years ago constructed in this manner, and has in no respect failed, though the location admitted of but little fall. The bottom of the drain was firm, and the covering earth of clay. In other cases, from neglecting some of the directions here given, the drains have either never operated, or failed in a few weeks.

There is another mode of filling that is cheap, and I believe effectual, though I have only made one recent trial of it. This is with straight slender pine poles (such as our worn lands, under the second growth, furnish abundantly,) and small green branches of the same. This particularly suits where the oozy places are at various heights on the ditch side, and where higher filling with open materials would therefore be necessary. The green poles, of any length, and their boughs closely trimmed off, should be laid in the bottom of the ditch, as close together as possible, and two or three layers thick. The bottom layer of poles should be kept in advance of the next, and that, still ahead of the last layer—so that notwithstanding all the variations of size in the poles, they may be fitted closely together. There will be no need of keeping open a pipe as a passage for the water, as the poles cannot be laid so close as to impede the stream—and six or seven poles together will be enough, both to pass, and to cover the water. On the poles the boughs should then be laid, every top pointing down the stream. The green leaves of pine, thus laid on, make a far better cover to admit water and exclude earth, than straw or grass; and it is believed that it will be also the most durable.

When a covered drain is well made, there will be no more trouble with it, as long as the materials will last, or the passage remain open—and how long that may be, my experience does not enable me to say. But if this time, on the average, should not exceed ten years, the plan would be much cheaper than open side ditches, at least in most cases. It is not only to avoid the perpetual cleaning out, which open ditches need, and to effectually draw off the water, which open ditches rarely do completely, and for many months together—but a still greater gain is obtained in cultivating across the route of the drain, so as to show no trace of its existence, and to reap rich crops of grain, instead of having a lost space on each side of an open ditch for ploughs to turn on, and which will soon become a thicket of shrubs and briers, or requiring more annual labor to prevent that growth, than would cultivate it, after hollow draining. The spaces thus gained for cultivation will make an important addition to a piece of lowground. In addition to the loss of labor, and of crop, caused by the margin of a ditch being covered by a thicket, another great objection is, that the passage is sure to be sooner obstructed by the leaves and fallen branches; and these obstructions being concealed from observation, are not discovered until the channel is so choked as to cause evident and considerable injury. The necessity of clean margins to the main carrier is greater than for the side ditches; though it is only the latter that can be covered, and cultivated across.

Cross ditches (such as O P,) are required to discharge the water from the side ditches into the main stream; and as they serve as obstructions to the passage of ploughs and carts, they should be as few as will serve, and the location as convenient as possible. Cross ditches should be made either—first, where the side ditch approaches nearest to the main carrier—or, second, through some basin-shaped depression, in which water would otherwise remain—or, third, where the passage of a land stream, or a washing torrent from rains, interrupts the continuous course of the side drain. These ditches should be straight, and in such directions as to suit well with the ploughing, and also to discharge their water easily, avoiding an abrupt change of direction, both in receiving and discharging the water. By making use of suitable seasons, the plough may greatly aid the construction and preservation of cross ditches—and to them most of the observations will apply, that were submitted in my first communication, respecting the proper and improper management of highland drains, and which will therefore not be repeated here. If the cross ditch passes through a depression, the subsequent cleaning out of the ditch may serve to make the surface more level. If much sand or mud is brought down into such a ditch, and it has a sufficient descent throughout its course, the cleaning out may be almost confined to that part of its course where the margin needs raising: and if this is done before the sediment stands long enough to become consolidated, the ordinary stream, or certainly the next flood of rain, will

sweep out the deposite above, and throw it into the part cleared out before. In this manner, on any stream or ditch having enough fall, the labor of deepening may be almost confined to particular spots, (where earth is wanting,) and the water alone will distribute the deepening through the whole course of the channel. This offers an important advantage: and if it is neglected, and the cross drains permitted to become so choked as to require a complete and thorough cleaning out, the sand will be thrice as thick in their upper ends, where it will be a nuisance on the margins, as at the lower parts, where the addition might be beneficial. All rapid streams, whether large or small, are continually moving on the sand and other deposites brought into them: and if the channel is merely kept open, this natural operation will convey away (without cost or injury,) the earth which usually serves, first, to choke the channels, and then causes great loss of labor in removing it. The sand, or other loose deposite in a stream, will never stop in its course toward the outlet, until it meets with level and smooth water, or some fixed obstruction.

When land streams cause a necessity for a cross drain, and especially those which have before brought down a quantity of sand, forming a high point running into the lowground (as Q N,) the cross drain should be made just above that point, so as to be low enough to receive the water from the side ditch above. This, the land stream, (if any,) may regularly pass through. But the washing torrents of rain water ought still to be directed over their old deposite of sand, (as by a log at *l*,) to which not much more harm can be done, and thence into the cross ditch, after having dropped most of the earth with which they were loaded.

It is not often the case that "boiling springs," or bursts of water, rise perpendicularly through low lands. But this is sometimes the cause of wetness, and the evil is generally not to be remedied by any kind of draining, except Elkington's vertical plan, by boring with an auger to the source of these springs, and conducting the water away by a proper channel. I will not occupy the reader's time in attempting to explain a plan of which I have no practical knowledge. But without resort to boring, lands much subject to these perpendicular spouts are not reclaimable. Boiling springs are caused by water being confined under a sloping stratum of clay, or some other impervious earth, which though continually pressed upon by supplies from a much higher source, cannot escape until it meets with open fissures in the clay, or reaches a pervious and absorbent earth. If the former case, the water bursts through, and boils up in a spring; and in the latter, (if the supply of water is small,) spreads through, and keeps wet, every part of the neighboring soil, though no collection of water may show any where. A ditch cut through such land may catch and divert some of the water, but will fail to drain its margin at the distance of only a few feet. The spring water is in such cases rising perpendicularly from fissures perhaps ten feet or lower down; and a ditch can only take off what rises immediately under it. If by means of boring, one or more sufficient openings could be made through the clay, so as to tap the subterraneous reservoir where it is pressed to escape, it would rush through these vents, and cease to flow in the former less preferable channels, and to injure the lands below. Such is the general principle of Elkington's manner of draining, which has been of such wonderful use in England, as to gain for the discoverer a large reward by parliamentary grant.

After a piece of lowground has been ditched in the manner directed, the drainage may be made still more perfect and durable, and the subsequent cultivation facilitated, by the direction and width of the beds or ridges. As the most valuable grain crop made on such land is corn, the land is generally laid off, principally with a view to its cultivation—in ridges five, five and a half, or six feet wide, when the land is in corn; and these narrow beds are sometimes (but not always) doubled, when wheat or oats follow the corn. These narrow beds are attended with much trouble and inconvenience. Of course each water furrow must be kept open, deep and clear, and with a good outlet, or it serves no purpose as a drain—and the narrower the beds, the more water furrows there are, to require this labor and care. The cost of tillage is also greater than on the plan I shall propose. I prefer the beds to be twenty five feet wide when finished: but they may be gradually brought to this unusual width by being made twelve and a half, (or even six and a quarter,) at first, and two, or four, thrown into one, at some later tillage. If twenty five feet beds are made at first, by ploughing on a flat surface, they will be too flat to keep dry enough, even after being ploughed a second time in the same manner, and of course the water furrows between, being doubly deepened by the plough. But a similar third deep ploughing being given, after gathering the corn to sow wheat or oats on, will make the beds high enough; and every furrow will be so deep as to form an excellent ditch. As long as more elevation to the beds is desired, the plough should work to raise them: but when they are high enough, the ploughing should sometimes *cleave* the bed, or reverse the former direction, throwing the furrow slices from the middle, and towards the edges of the bed—but at no time into the water furrow. When a cleaving ploughing is wanted, to lower the beds or to make them less rounding, the ploughs should first cut out the water furrows, clean and well, with three or four furrows to each. The first slices so cut will lie against the shoulder of the beds. After two water furrows are so ploughed out, the ploughman breaks up the bed between, commencing at the shoulder, and neatly lapping his first and outside slices, on the first thrown out of the water furrow. The closing furrows on the former middles, will not be much below the general surface of the beds, which will then be nearly level across, with narrower and yet deeper water furrows between them.

The direction of these beds may vary so as best to throw off the water, or to guard against being washed by freshets. But each water furrow ought (if possible) to decline gradually to some ditch into which it will throw its water—and land, and labor in tillage, will be saved, by having an outside bed to lie alongside of some long ditch—whether across, or in the direction of the main carrier. If the beds in any one place run with a stretch of the main carrier, (straightened as before directed,) the ploughs will cut so near the edge of the ditch as to keep it clean and productive, (as the bed I P H.) If the beds are laid off by some

cross ditch, and empty all their water furrows into the main drain, (as above the cross ditch O P,) the great width of the beds will still permit the ploughing to be carried very near, by ploughing across the end, in turning. In such wide bedding each water furrow will be a more effectual drain than the four or five which would be made by the usual narrow bedding. As their location is permanent, there will be but little trouble in giving them good outlets, cut with hoes or spades.

For laying off corn rows on these wide beds, the following plan is very expeditious, and sufficiently accurate, if executed by a careful and skilful ploughman. The soil being well ploughed and harrowed, and in good order for planting, a single-horse trowel (or shovel) plough is so guided by the ploughman's eye, as to draw a furrow parallel to the water furrow on each side of the bed, and three feet distant from the middle of the water furrows. These two outside lines being drawn, the ploughman runs one between them, (as the *splitting* rows are laid off, when setting poles are used:) two other rows are then made by splitting between the central and outside rows, which will make all not quite five feet apart, except the two on the sides of each water furrow, which will be six feet. Sometimes it is expedient to have the beds crooked in part or the whole of their course, so as to keep parallel with a crooked outline, and preserve greater length of ploughing—and this mode of marking off the rows, will suit for crooked as well as for straight beds.

It is not probable that every different plan for draining which has been described, can be advantageously used on one piece of land, as circumstances will generally direct some one of the methods to the exclusion of another. But still all the different circumstances may occur to a farmer in different places, if not at the same. R. N.

DISEASES OF POULTRY.

From the Annales des Sciences Naturelles.

From a series of observations made on the diseases of domestic poultry, Mr. Flourens makes the following conclusions:—1. In these animals, cold exercises a constant and determinate action on the lungs. 2. The effect of this action is the more rapid and more severe, the younger the animal is. 3. When cold does not cause acute and speedily fatal inflammation of the lungs, it produces a chronic inflammation, which is pulmonary consumption itself. 4. Heat always prevents the attack of pulmonary consumption: when the latter has taken place, heat suspends its progress, and even sometimes arrests it entirely, and effects a complete cure. 5. Pulmonary consumption is never, in any stage, contagious: fowls affected with that disease were not all day along with the healthy fowls, but at night roosted in the same places, without communicating their disease to them. 6. Lastly, the action of too long confined air exposes these animals to abscesses of the cornea, and inflammation of the ball of the eye. These abscesses and inflammation are also caused in a still more cruel manner, by cold, especially when accompanied with moisture.

In France, they estimate the consumption of bread, including that used with soups, at 2 lbs. and a quarter per person; whilst, in England, it is not quite 13 ounces.

ON THE RESTING OF LIGHT SOILS, AND CONSOLIDATING THEM WITH THE PRESSER.

From the Quarterly Journal of Agriculture.

The attention of Scots agriculturists has been strongly drawn to the evident signs of exhaustion, which almost the whole of the lighter soils in the country has of late years exhibited. The wheat has been a failure ever since 1826; the crop has been weak, ill ripened, and in many cases blighted, even in places where blight was never before known, and insects, the origin of which appears to defy the researches of the most experienced naturalists, have destroyed the grain, notwithstanding all the efforts of the most skilful farmers. The falling off in the weight of green crops, potatoes and turnips, as well as the artificial grasses, is not less remarkable. In our fathers' days, *three* cuttings of clover were not uncommon during the first summer after laying down the land to grass; but now we rarely see a good *second* cutting.

These are matters of great importance both to landlords and tenants, and to the country at large. They are now exciting great attention among practical men; but although I have heard many ingenious theories and schemes for remedying the evil, proposed and discussed among men possessed of scientific as well as practical experience, yet, after all that I have heard, the conclusion left on my mind comes shortly to this; namely, that those lighter soils which in former times never missed either a green or a corn crop when properly prepared, have lost their productiveness solely through the too frequent use of tillage, whereby such soils have become so much pulverized that they are in a soft, and as it were a *puffed up* state, quite unfit for carrying the frequently repeated crops which a modern rotation prescribes; and such being the cause of the evil, the remedy lies in *resting*, and thereby restoring to the soil, its wonted strength and consistence.

What I recommend then, is, to throw a large proportion of every farm into grass to lie as circumstances may suggest for a period of years *not less than five*, before it be again submitted to another rotation of crops. This mode of restoring the soil may appear to many farmers who have hitherto trusted chiefly to grain for the payment of rents and expenses, as a plan to which they cannot resort, unless their landlords relieve them, during the regenerating process, of part of their rents; and no doubt in many cases this may be absolutely necessary, and certainly when the tenant cannot do his part without such relief, it will be the wisest policy in the landlord to give him the relief he requires. But, in other cases, where the farmer is in circumstances to bear a little present sacrifice, he should look forward to the future in the certainty of reaping great crops when the time of breaking up arrives for his recompense: he may throw his whole farm into grass, and continue to pay his full rent, and yet not be a loser. This fact has been ascertained by positive experience, that for years past, by keeping a well regulated breeding stock of cattle and sheep, chiefly the latter, *more money* may be drawn from an acre of light land in *beef and mutton*, than by any rotation of *corn* crops. Of course, the circumstances of each case must dictate to the farmer the mode in which he ought to set about the laying out of his farm, and the proportions to be put into permanent

grass annually; but I will state what I am doing in my own case.

I am now laying to rest a farm of 500 acres, which has for the last twenty-five years been under a regular rotation of five shifts, and it is my intention to leave it in grass for five years, taking care that each division, as it is sown out, shall be in the highest condition into which I can afford to put it, for it is well known that a light soil laid out to grass in poor condition will rather *deteriorate than improve*. Having a breeding flock of sheep on an adjoining farm, I propose extending this profitable stock to such a number as will enable me to pasture all my permanent grass, *for the first year at least*, with sheep; afterwards, it will be matter of calculation whether I shall continue to use the whole of my grass or let a part, so as to lessen the risk of stocking the whole. This process of laying out my farm, will, of course, require five years. I will gradually be reducing my working expenditure until the last year of the five, when I will again have to muster my working strength; and that I expect to be well enabled to do by a sale on the ground of the corn crop on the last sown out division,—the manure which that crop should produce not being wanted the following season.*

I may here remark, that great care should be taken to select the most approved grasses suited to the various soils, and not to be sparing in the quantity of seeds. I would also strongly recommend the frequent use of a heavy roller in spring and autumn, giving, as often as circumstances may require, a light topdressing of any compost (or even pulverized soil of a different quality from the field on which it is laid) previous to the spring rolling. This will be found to invigorate and thicken the grass in an extraordinary degree.

After this process of resting the soil is completed, I anticipate a full reward for all my *labor and patience*, by seeing the land again in a firm and consolidated state, quite fit to produce the alternate crops we were accustomed to thirty years ago; and, I trust, I shall be warranted in breaking up my lea with a crop of wheat, or at any rate with barley.

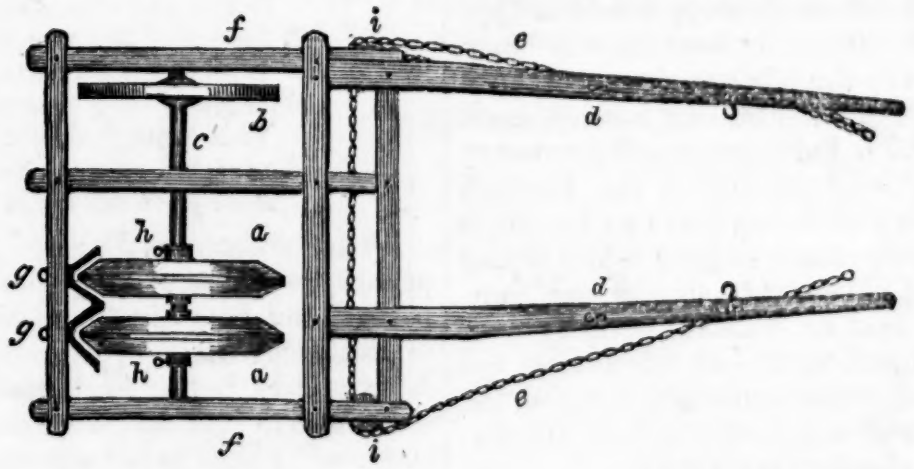
I propose ploughing the lea for wheat or barley, not in the old way,—of giving two furrows, and harrowing till the soil is sufficiently reduced for these crops,—but by one seed-furrow with the plough, followed by that invaluable implement on light soils—the *presser*, an instrument not so well known in Scotland as it ought to be. I subjoin a drawing for the information of any of my brother farmers who may wish to try the presser. From its simplicity and low price (varying from *5l.* to *7l.* according to the weight required) it is within the power of all to purchase and work it.

A very striking instance of the utility of this machine was exhibited on a field belonging to my friend Captain Barclay Allardice of Ury, who last season broke up a piece of grass-land near his mansion house, supposed to have lain out about a hundred years. It was on a strong soil, and required four horses to work the plough, which was followed by the presser, leaving the work in such a finished state, that although Captain Barclay's intention was to sow the field with oats after the preparation of a winter's exposure, he was induced to try a crop of wheat, which succeeded beyond his expectation, having reaped fully fifty bushels per English acre, while the probability is, that if the field had been sown in spring with oats, they would all have rotted.

The mode of working this implement is very simple. A presser is required for every two ploughs, the horse that draws it following the last plough of the two in the furrow, which so regulates the presser that it leaves the land exactly as if it had been gone over with a drill-sowing machine; the furrow-slices are laid flat at the bottom, and the surface left more like a field of fallow than grass land. By affixing a sowing-box to the presser, which could be very easily done, the whole process of ploughing, pressing and sowing, could be going on at the same time, and by a double turn of the harrows, the operation could be completed without the usual risks of a change of weather, to which in this variable climate we are liable in every sowing season.

I have used the presser for two seasons, and can with confidence recommend it on all light soils, with every sort of corn-crop. It is an invention which we owe to our English neighbors. It has been in use in many counties in England for several years past.

I shall now give a detailed description of the presser, hoping that the few hints which I have given, may be useful to farmers of light soils.



The scale of this figure is a quarter of an inch to the foot.

*We would here suggest to our friend, our present correspondent, whose opinion of the deterioration of light lands being caused by too frequent ploughing is correct—that instead of raising the means of working the farm when the grass was broken up, by selling the straw of any portion of the corn-crop, he should rather lay by annually for that purpose a portion of the *money* which was drawn from the land in the shape of *beef and mutton*. It grieves us to the heart to see a farm robbed of its straw, under any pretence but that of vicinity to a large town, from which large supplies of extraneous manure may be obtained in exchange.—*Ed.*

In the figure, *a a* are the pressers, made of cast-iron, and weighing 2½ cwt. each. They are made either in the form of a wheel or of two cups, fastened at the edge; they are 2 feet 9 inches in diameter; they are fastened on long slip-boxes, which slide upon the axle *c*, and secured by pinching-screws *h h* at the width to suit the width of the furrows to be compressed. *b* is a cast-iron wheel, which rolls on the land-side or sward, and carries the frame-work. This wheel and the two pressers are hung on the axle *c*, which runs in plumber-blocks fastened to the under side of the frame-ends *f f*, which are made of stout ash, and bent so as to suit the height of the axle *c* and the draft of the shafts *d d*, between which the horse is yoked. *e e* are chains, which pass over the pulleys *i i*, and are fastened to the draught-hooks of the collar of the horse, to equalize the draught of the machine. *g g* are two cleaners, made forked, and fastened with pinching screws on the hindmost rail of the frame, and are made to shift, to suit the width of the presser; they are intended to scrape off any earth that may adhere to the pressers during their action. H. W.

USE OF CORN IN ENGLAND.

Abridged from "Vegetable Substances used for the Food of Man."

The Anglo-Saxon monks of the Abbey of St. Edmund, in the eighth century, ate barley bread, because the income of the establishment would not admit of their feeding twice or thrice a day on wheaten bread. The English laborers of the southern and midland counties, in the latter part of the eighteenth century, refused to eat bread made of one-third wheat, one-third rye, and one-third barley, saying, that "they had lost their rye-teeth." It would be a curious and not unprofitable inquiry, to trace the progress of the national taste in this particular. It would show that whatever privations the English laborer may now endure, and whatever he has endured for many generations, he has succeeded in rendering the dearest kind of vegetable food the general food of the country. This single circumstance is a security to him against those sufferings from actual famine which were familiar to his fore-elders, and which are still the objects of continual apprehension in those countries where the laborers live upon the cheapest substances. Wages cannot be depressed in such a manner as to deprive the laborer, for any length of time, of the power of maintaining himself upon the kind of food which habit has made necessary to him; and as the ordinary food of the English laborer is not the very cheapest that can be got, it is in his power to have recourse for a while to less expensive articles of subsistence should any temporary scarcity of food or want of employment deprive him of his usual fare,—an advantage not possessed by his Irish fellow-subjects, to whom the failure of a potato crop is a matter not of discomfort merely, but of absolute starvation.

In the satire of Pierce Plowman, written in the time of Edward III., it is said, that *when the new corn began to be sold*,

"Woulde no beggar and breed that in it beanes were,
But of cocket, and clemantyne, or else clene wheate."

This taste, however, was only to be indulged "when the new corn began to be sold;" for then a short season of plenty succeeded to a long period of fasting; the supply of corn was not equalized throughout the year by the provident effects of commercial speculation. The fluctuations in the price of grain, experienced during this period, and which were partly owing to the insufficient agricultural skill, were sudden and excessive. On the securing of an abundant harvest in 1317, wheat, the price of which had been so high as 80s., fell immediately to 6s. 8d. per quarter. The people of those days always looked for a great abatement in the price of grain on the successful gathering of every harvest; and the inordinate joy, of our ancestors at their harvest-home—a joy which is faintly reflected in our own times—proceeded, there is little doubt, from the change which the gathering of the crops produced, from want to abundance, from famine to fulness. That useful class of men who employ themselves in purchasing from the producers that they may sell again to the customers, was then unknown in England. Immediately after the harvest, the people bought their corn directly from the farmers at a cheap rate, and, as is usual under such circumstances, were improvident in the use of it, so that the supply fell short before the arrival of the following harvest, and prices advanced out of all proportion.

The reformation, and the discovery of America, were events that had a considerable influence upon the condition of the great body of the people in England. The one drove away the inmates of the monasteries, from whence the poor were accustomed to receive donations of food; the other, by pouring the precious metals into Europe, raised the price of provisions. In the latter half of the sixteenth century, wheat was three times as dear, both in England and France, as in the former half. The price of wheat, upon an average of years, varied very little for four centuries before the metallic riches of the New World were brought into Europe; upon an average of years, it has varied very little since. The people of the days of Henry VIII. felt the change in the money-value of provisions, although the real value remained the same; and they ascribed the circumstance to the dissolution of the monasteries. There is an old song of that day in the Somersetshire dialect, which indicates the nature of the popular error:—

"I'll tell thee what, good vellowe,
Before the vriars went hence,
A bushel of the best wheate
Was sold for vourteen pence;
And vorty eggs a penny
That were both good and newe;
And this, I say, myself have seen,
And yet I am no Jewe."

When wheat was fourteen pence a bushel, it was probably consumed by the people, in seasons of plenty, and soon after harvest. During a portion of the year, there is little doubt that the English laborer, had better food than the French, who, in the fifteenth century, were described by Fortescue thus:—"Thay drynke water, thay eate apples, with bred right brown, made of rye." Locke, travelling in France, in 1678, says of the peasantry in his journal, "their ordinary food, rye bread and water." The English always disliked what they emphatically termed "changing the white loaf for the brown." Their dislike to brown bread in some degree prevented the change which they proverbially dreaded. In the latter part of the six-

teenth century, however, this change was pretty general, whatever was the previous condition of the people. Harrison says, speaking of the agricultural population, "as for wheaten bread, they eat it when they can reach unto the price of it, contenting themselves, in the mean time, with bread made of oates or barlie, a poore estate, God wot!" In another place, he says, "the bread throughout the land is made of such graine as the soil yieldeth; nevertheless, the gentilitie commonlie provide themselves sufficiently of wheate for their own tables, whilst their household and poore neighbors, in some shires, are inforced to content themselves with rye or barlie." Harrison then goes on to describe the several sorts of bread made in England at this day, viz. manchet, cheat, or wheaten bread; another inferior sort of bread, called ravelled; and lastly, brown bread. Of the latter there were two sorts: "One baked up as it cometh from the mill, so that neither the bran nor the floure are any whit diminished. The other hath no floure left therein at all; and it is not only the worst and weakest of all the other sorts, but also appointed in *old time* for servants, slaves, and the inferior kind of people to feed upon. Hereunto, likewise, because it is drie and brickle in the working, some add a portion of rie-meale in *our time*, whereby the rough drinesse thereof is somewhat qualified, and then it is named mescelin, that is, bread made of mingled corne." In the household book of Sir Edward Coke, in 1596, we find constant entries of oat-meal for the use of the house, besides "otmell to make the poore folkes porage," and "rie-meall, to make breade for the poore." The household wheaten bread was partly baked in the house and partly taken of the baker. In the same year it appears, from the historian Stow, that there was a great fluctuation in the price of corn; and he particularly mentions the price of oat-meal, which would indicate that it was an article of general consumption, as well in a liquid form as in that of the oatcakes of the north of England.

In 1626, Charles I., upon an occasion of subjecting the brewers and maltsters to a royal license, declared that the measure was "for the relief of the poorer sort of his people, whose usual bread was barley; and for the restraining of innkeepers and victuallers, who made their ale and beer too strong and heady." The grain to be saved by the weakness of the beer was for the benefit of the consumers of barley-bread.

At the period of the Revolution, (1689,) wheaten bread formed, in comparison with its present consumption, a small portion of the food of the people of England. The following estimate of the then produce of the arable land in the kingdom tends to prove this position. This estimate was made by Gregory King, whose statistical calculations have generally been considered entitled to credit.

	Bushels
Wheat, - - -	14,000,000
Rye, - - -	10,000,000
Barley, - - -	27,000,000
Oats, - - -	16,000,000
Pease, - - -	7,000,000
Beans, - - -	4,000,000
Vetches, - - -	1,000,000
In all	79,000,000

At the commencement of the last century, wheaten bread became much more generally used by the laboring classes, a proof that their condition was improved. In 1725, it was even used in poor houses, in the southern counties. The author of "Three Tracts on the Corn Trade," published at the beginning of the reign of George III. says, "it is certain that bread made of wheat is become much more generally the food of the common people since 1689 than it was before that time; but it is still very far from being the food of the people in general." He then enters into a very curious calculation, the results of which are as follow: "The whole number of people is 6,000,000, and of those who eat

Wheat, the number is,	3,750,000
Barley, - - -	739,000
Rye, - - - -	888,000
Oats, - - - -	623,000
Total	6,000,000"

This calculation applies only to England and Wales. Of the number consuming wheat, the proportion assigned to the northern counties of York, Westmoreland, Durham, Cumberland and Northumberland, is only 30,000. Eden, in his History of the Poor, says, "about fifty years ago, (this was written in 1797,) so small was the quantity of wheat used in the county of Cumberland, that it was only a rich family that used a peck of wheat in the course of the year, and that was used at Christmas. The usual treat for a stranger was a thick oatcake (called haver-bannock) and butter. An old laborer of eighty-five, remarks that, when he was a boy, he was at Carlisle market with his father, and wishing to indulge himself with a penny loaf made of wheat flour, he searched for it for some time, but could not procure a piece of wheaten bread at any shop in the town."

At the time of the Revolution, according to the estimate of Gregory King, 14,000,000 bushels of wheat were grown in England. In 1828, according to the estimate of Mr. Jacob, in his Tracts on the Corn Trade, 12,500,000 quarters, or 100,000,000 bushels, were grown. The population of England at the Revolution was under five millions, so that each person consumed about three bushels annually. The population, at the present time, is under fifteen millions, so that each person consumes about seven bushels annually.

ON PROTECTING SEED-CORN FROM THE DEPREDATION OF BIRDS.

From the Southern Agriculturist.

January 25, 1834.

Mr. Editor,—A Young Planter in your November number says, "there are many of your readers who can make valuable communications." If you think the method I have adopted to get rid of minding corn when planted, as coming under that head, you are welcome to it. It is by *sooting*.

Half a bushel of seed-corn is put in a tub, and hot water poured on it, a *half-pint* of tar is then added, and the corn kept constantly stirred until every grain is thinly coated with it. Soot is now put in and the whole stirred until every grain is perfectly black. This method I have adopted for many years; never have a minder, and the stand is much better than when I had to mind it. The crows and larks will visit your fields as soon as the

grain makes its appearance, (which will be two days later than when not sooted,) and try many of the hills, croping one grain and then leaving and going to a second, having plucked here and there, they will leave the field entirely, finding the grain too bitter to be eaten. As we always plant more than we mean to have, the few they take is not of the least consequence. If this communication is of any service, I shall be gratified, remembering this is nothing new, but it may be to some, of value. H. C. R.

We adopted this plan many years ago, and never had occasion to place any one in the fields, nor had we ever to supply more places than was usual, where there was a regular supply of little negroes to scare away the birds. In one respect, this plan answers better than the old one of minding, for less injury is sustained from larks; which birds being small, and flying low, are exceedingly troublesome. The soaking in water ought never to be omitted, and we have usually found that twelve hours was not too much: we generally put the corn in water the night previous to its being used. Should the grain not imbibe moisture enough before it is coated with the tar, and dry weather follow its planting, there will be a difficulty in getting it up, which will not be the case if soaked twelve hours.—[*Ed. So. Agr.*

ON SEA-ASHES AS A MANURE.

Extract of a letter addressed to the Hon. Whitemarsh B. Seabrook, and communicated by him for publication in the Southern Agriculturist.

Columbia (S. C.) January 26, 1834.

Dear Sir,—The subject of the finest and best, together with the most profitable quality of cotton is, of course, one of the most important considerations, not merely to the cotton-planter, but to the state at large. I noticed some time since the title of an article proposing salt as a manure for the purpose of increasing the fine staple of the cotton. I have not read this article; but I should judge, *a priori*, that the idea is probably a correct one; for, most certainly, the finest cotton produced is that cultivated within the influence of the sea-air. This reminds me of a manure that has been in use in Holland, and adjoining countries, that is so valuable as to be transported, even by land carriage to very considerable distances, and has been for very many years a most important article of commerce. It is called "*Cendres-de-mer*," (sea-ashes,) and is nothing else than salt or brackish marsh or peat, reduced to ashes. By this process of burning, this substance is rendered comparatively very light, and probably its fertilizing properties concentrated. There is probably no country on this globe that has more of this substance than these Southern States, and I feel a great desire that it should have a full trial, not merely for the use of the cotton-planter; but for all other cultivators of the soil within a practicable distance from the seas. If I could procure in time, this coming spring, a small quantity of such ashes, were it only one or two barrels of it, I would give it a fair trial on my poor sandy land. You are so zealous an agriculturist, that I would expect from you an experiment with this manure on your own land, and that you would also prevail on some of your neighbors to try it. It appears to me that a kiln could easily be contrived, by which a considerable quantity of salt-marsh might be burnt at once, sufficient for a full experiment, which, if successful, might induce some enterprising and patriotic persons to undertake the manufacture of this manure on a large scale and for sale. It appears to me, my dear sir, that we need, in this country, something of this sort as a stimulus to ourselves as well as to our lands; for without some such encouragement, we become dispirited by the unproductiveness of our soils after a few years cultivation. The possession of a convenient means of adding fertility to our fields, would most probably encourage us to further exertions, which would, most probably, be followed by due advantages.

The selection of seed, with a view of procuring a finer staple of cotton, is, no doubt, an essential part of the business; but, is it sufficient? Is it not probable that there is a great deal also in the quality of the land, and can an extensive plantation or field be expected to possess, in every part of it, those properties on which the best and most profitable product in cotton may depend? It seems to me that such properties in the soil are more likely to be produced by the labor and ingenuity of man, aided by science, observation, experiment and untiring industry, than to be invariably or even frequently produced by nature. These "sea-ashes," which are found beneficial in Flanders, in France, &c. would, in all probability, be alike beneficial in this country, and we have very strong reasons to believe that this kind of manure is peculiarly adapted to the improvement of cotton. Ashes and salt being strongly stimulating manures, renders it very probable that by them you might obtain your desideratum, healthy and vigorous cotton-plants, joined to fineness, length and strength of the product. This probability seems so great that it is most undoubtedly worth making the experiment.

Permit me to repeat also, that as an article of internal commerce for the amelioration of all the lands within reach of navigation or rail road transportation, it may become an object, the importance of which, future times will alone fully appreciate.

I am, very respectfully, my dear sir,
Your obedient servant,

N. HERBEMONT.

NATURALIZATION OF FISHES.

From Proc. Zool. Soc.

At a late meeting of the Zoological Society, were read two letters from Mr. J. B. Arnold of Guernsey, containing particulars of his experiments in the naturalization of sea fishes in a lake chiefly supplied with fresh water. The area of the lake is about five acres; its depth various; and its bottom also various, being muddy, gravelly and rocky. The water is during nine months of the year drinkable for cattle, but in consequence of a supply which it receives through a tunnel communicating with the sea, is rather salt in summer, at which season the fishes do not come down so plentifully as at other times. The fishes introduced into the lake have been the *grey Mullet*, *Sole*, *Turbot*, *Brill*, *Plaice*, *Basse*, *Smelt*, and *grey Loach*. All of these have thriven well, and are believed to have increased in numbers: the *grey Mullet* especially is known to have bred as freely as in the sea itself. A single *Whiting* having been caught for three successive years, was found to have grown considerably: a *Pilchard* also throve well. All

the above-mentioned fishes were placed in the lake, except perhaps the *Brill;* but others, as the *silver Bream*, appear to have introduced themselves. It is even suspected that hybrid fishes have been produced, as several have been caŭght which were unknown to persons well acquainted with the species usually met with on the coast of Guernsey. Mr. Arnold adds that sea fishes, after having been naturalized in his lake, have been transferred to ponds of spring water, where they have not only lived, but done well; and that such naturalized fishes have been carried to a long distance, being much more tenacious of life than those caught in the sea.

ALE FROM MANGEL WURTZEL.

By a Correspondent of the Coventry Herald.

From seeing an article in a newspaper, in the year 1829, describing how a good beverage might be produced from the mangel wurtzel, I have made a number of experiments, and have at length completely succeeded. In the article before alluded to, it was stated, that a portion of about ten pounds of the root to a gallon would make a good liquor; but with fifteen pounds weight to the gallon, an excellent ale will be produced; the addition of two pounds' weight of treacle to a firkin will be a great improvement. One-third malt and two-thirds mangel wurtzel liquor will make capital ale; so that, even in this way, an important saving will be effected.

Our method is first to mash and clean the roots well, take off the top completely, scrape (rather pare) off the outer rind, slice and boil them until soft and pulpy; squeeze the liquor from the pulp as much as possible, and then boil it again with about six ounces of hops to nine gallons, and work with yeast in the usual way. Thus a cottager, by boiling his pot over his winter fire of a night, and using the root as we have described, might seldom be without a refreshing beverage even, the greatest part of the year, for the roots may be kept in a cool place, in a proper state for use, during most of the winter. The leaves, stripped from the plant in August and September, are valuable for the cow or pig, not retarding its growth in the least; and the roots, boiled and mashed in the liquor, and either milk or a small quantity of meal added, will feed the pig at a trifling expense.

The culture of this invaluable root is very simple. Let the single seeds be put on well manured ridges, eighteen inches apart, and six or eight inches between the plant; hoeing down and keeping clean from weeds will be all that is necessary.

THE EXTINCT DODO.

From Jameson's Journal.

Naturalists have known for a long time, but only through means of figures and descriptions, executed in the sixteenth and the commencement of the seventeenth century, a great bird, incapable of flying, found in the Isle of France after its discovery, but which appears to have been since entirely extirpated. It was named *Dronte, Dodo:* it is the genus Raphus of Mæring, or the Didus of Linnæus. All that is preserved of this bird, is a head and foot deposited in the Ashmolean Museum at Oxford, and another foot, with a figure painted in oil, after the living animal, which are in the British Museum. Cauche, who also saw it in the Isle of France, has given an imperfect description of it, in which he says it had but three toes, which has caused some naturalists to form a second species, under the name *Didus Nazarenus*, the first being called *Didus ineptus*. Leguat mentions another bird, resembling the Dodo, found in the Island of Rodrigue, and which has been named *Didus solitarius*. Cuvier had sent him, by an excellent naturalist in the Isle of France, M. Desjardins, the large bones of a bird found in the Island of Rodrigue, in part encrusted with calc-tuffa, which Cuvier conjectured might be those of the Dodo. Judging from the cranium, sternum, and very small humerus, the thigh-bone and tarsus, he supposed they belonged to a gallinacious bird. M. Blainville, in a learned memoir, endeavors to show that the Dodo was a kind of vulture, which, he says, it resembles in beak, head, claws, and other circumstances of its organization. During his visit to England, Cuvier compared the remains of the Dodo preserved in the British Museum and in that of Oxford with the bones sent to him by Desjardins, when he found that the heads were identical, but the tarsus is more elongated than that of the British Museum, which, again, is thicker, but shorter, than that of Oxford. There is, therefore, some doubt as to the tarsus, but none as to the head, which he therefore refers to the Dodo; and as this head, as also the sternum found along with it, and also the humerus and femur, undoubtedly belong to the Gallinæ, this bird falls to be placed in that tribe.

DRY STONE WALLS AS A FENCE.

From the Quarterly Journal of Agriculture.

Stone fences are always built by the piece, and paid for by the rood. A rood contains thirty square yards of solid building. A wall that is one yard high in the body will therefore contain one rood in every thirty yards of its length. The coping is never taken into the measurement, as its varying height, according to the materials of which it is composed, could afford no fixed data. In taking the contents of a wall, the gateways are measured over, as the trouble of building two corners in each is considered equivalent to the labor of building a piece of plain work equal to the length of the gateway, which is generally about ten feet in width. A rood of dry stone-wall generally costs ten shillings in building. At the dimensions already given, a wall requires at least thirty tons, or thirty double horse cart-loads of stones, which, at four-pence per load, the ordinary price of quarrying such stones, will make the material equal to ten shillings per rood. On an average of distances on a farm, a pair of horses and a man will require at least one day to a load, drive, and empty the stones properly; thirty loads, which, at ten shillings per day, the ordinary value of horse labor, will give other ten shillings per rood; so that, on the whole, a stone-fence will cost at the least thirty shillings per rood of thirty square yards, or one shilling per square yard of any dimensions. Hence we have only to take the superficial contents of the body of a stone-fence, and calculate that at one shilling per square yard, in order to get the value of the whole. This is a very simple formula of calculation. A man by himself will seldom build more than one rood per week, taking into account the chance of bad weather; but two men will build more than two roods per week under the same circumstances.

Hence we find builders most anxious to undertake this kind of work in company.

THE "CULTIVATOR."

We have received the two first numbers of a new agricultural periodical, which will be issued monthly at Albany, New York. It is published by the New York State Agricultural Society, under the immediate direction of a committee of publication, composed of Messrs. J. Buel, J. P. Beekman, and J. D. Wasson. Thus set on foot by the patronage of government, and sustained by editorial talents of the first order, and bestowed gratuitously, the "Cultivator" is furnished at the remarkably low price of fifty cents a year, or at twenty-five cents each, for a subscription for twenty or more copies. The monthly sheet has sixteen pages, large octavo. Its matter, so far, is good—and it cannot well be otherwise, while it has its present zealous and able conductors. We will take pleasure in receiving and transmitting subscriptions for this work.

The price of this publication is fixed at this very low rate, for the purpose of inducing, if possible, every tiller of the soil in the state of New York to buy, and to read it. This is a noble object—and the steps taken to reach it, cannot but have consequences highly useful to the agricultural community. But while this acknowledgment is made, and notwithstanding the high opinion expressed of the work, and the abilities of its conductors, we will venture to add our fears, that this good will be effected by the destruction of another of equal, if not of greater value—the excellent agricultural papers already established in the western part of New York, by individual enterprise and capital, and which have rendered essential service to agriculture, at a very cheap rate—though not so cheap as to be able to compete with the *Cultivator*. It remains to be seen, whether this is the best mode of aiding the diffusion of agricultural knowledge, even putting aside the consideration of all losses of individuals. We are decidedly in favor of "free trade"—and consider that it is as unjust, and as impolitic, for government to injure any employment of capital and industry, by competing with, and underselling individual laborers or traders, as it is to commit the more common error of enabling them to make exorbitant profits, by indirect bounties, or restraints which destroy fair and general competition.

Besides—however great the amount of talent, zeal, and influence, with which the Cultivator is now conducted, it cannot be expected that such services are to be retained in steady operation, without the incentive of reward, or emolument. The conductors would be more than men, if they can toil without flagging, in so humble a vocation, merely from the impulse of patriotism. And if, indeed, they should become weary, it will take place after all the other agricultural papers of New York have sunk, and the whole business of periodical instruction will be to re-construct.

It may be thought that our fears are, in truth, for the Farmers' Register. This is not the case—for, though it may be mistaken, it *is* our opinion, that no periodical publication in New York, can lessen the circulation of one in Virginia; nor can the latter injure one of the former. Any good agricultural journal, will be found instructive and useful to farmers of every other country: but still, the climate and system of husbandry of the state of New York, differ so much from those of Virginia, that no such injurious competition can be maintained, no matter by what difference of prices. On the contrary, the circulation of any such journal in a distant region, will increase the readers' inclination for similar supplies nearer home, and more generally suited to their wants. We should be pleased if the Cultivator could be seen and read by every farmer in Virginia: and believe, if such was the case, that but few subscribers of the Farmers' Register would be thereby induced to give up the latter work—and very many others would be induced to become subscribers, by learning from so good a work, the great value of an agricultural journal, more particularly suited to their wants and habits.

VEGETATION OF THE PAMPAS OF S. AMERICA.

From Captain Head's Travels.

The great plain of the Pampas, on the east of the Cordilleras, is about 900 miles in breadth, and the part which I visited, though under the same latitude, is divided into regions of different climate and produce. On leaving Buenos Ayres, the first of these regions is covered for 180 miles with clover and thistles; the second region, which extends for 450 miles, produces long grass; and the third region, which reaches the base of the Cordilleras, is a grove of low trees and shrubs. The second and third of these regions have nearly the same appearance throughout the year; for the trees and shrubs are evergreens, and the immense plain of grass only changes its color from green to brown: but the first region varies with the four seasons of the year in a most extraordinary manner. In winter, the leaves of the thistles are large and luxuriant, and the whole surface of the country has the rough appearance of a turnip field. The clover in this season is extremely rich and strong; and the sight of the wild cattle grazing in full liberty on such pasture is very beautiful. In spring, the clover has vanished, the leaves of the thistles have extended along the ground, and the country still looks like a rough crop of turnips. In less than a month the change is most extraordinary; the whole region becomes a luxuriant region of enormous thistles, which have suddenly shot up to a height of ten or eleven feet, and all in full bloom; the road or path is hemmed in on both sides; the view is completely obstructed; not an animal is to be seen; and the stems of the thistles are so close to each other, and so strong, that, independent of the prickles with which they were armed, they form an impenetrable barrier. The sudden growth of these plants is quite astonishing, and though it would be an unusual misfortune in military history, yet it is really possible that an invading army, unacquainted with this country, might be imprisoned by these thistles before they had time to escape from them. The summer is not over before the scene undergoes another rapid change; the thistles suddenly lose their sap and verdure; their heads droop, the leaves shrink and fade, the stems become black and dead, and they remain rattling with the breeze one against another, until the violence of the pampero or hurricane levels them with the ground, where they rapidly decompose and disappear; the clover rushes up, and the scene is again verdant.

THE MOUSE.

From Jesse's Gleanings of Natural History.

An extraordinary instance of the rapid increase of mice, and of the injury they sometimes do, occurred a few years ago in the new plantations made by order of the crown in Dean Forest, Gloucestershire, and in the New Forest, Hampshire. Soon after the formation of these plantations, a sudden and rapid increase of mice took place in them, which threatened destruction to the whole of the young plants. Vast numbers of these were killed,—the mice having eaten through the roots of five-years' old oaks and chestnuts, generally just below the surface of the ground. Hollies also, which were five and six feet high, were barked round the bottom; and in some instances the mice had crawled up the tree, and were seen feeding on the bark of the upper branches. In the reports made to government on the subject, it appeared that the roots had been eaten through wherever they obstructed the runs of the mice, but that the bark of the trees constituted their food. This was ascertained by confining a number of the mice in cages, and supplying them with the fresh roots and bark of trees, when it was found that they fed greedily on the latter, and left the roots untouched. Various plans were devised for their destruction: traps were set, poison laid, and cats turned out, but nothing appeared to lessen their number. It was at last suggested, that if holes were dug, into which the mice might be enticed, or fall, their destruction might be effected. Holes therefore were made, about twenty yards assunder, in some of the Dean Forest plantations, being about twelve in each acre of ground. These holes were from eighteen to twenty inches in depth, and two feet one way by one and a half the other; and they were much wider at the bottom than the top, being excavated or hollowed under, so that the animal, when once in, could not easily get out again. In these holes, at least 30,000 mice were caught in the course of three or four months, that number having been counted out, and paid for by the proper officers of the forest. It was, however, calculated, that a much greater number of mice than these were taken out of the holes, after being caught, by stoats, weasels, kites, hawks, and owls, and also by crows, magpies, jays, &c. The cats also which had been turned out resorted to these holes to feed upon the mice; and in one instance, a dog was seen greedily eating them. In another, an owl had so gorged himself, that he was secured by one of the keepers. As the mice increased in number, so did the birds of prey, of which at last there were an incredible number. In addition to the quantity above-mentioned, a great many mice were destroyed in traps, by poison, and by animals and birds of prey: so that in Dean Forest alone, the number of those which were killed in various ways could not be calculated at much less than one hundred thousand. In the New Forest, from the weekly reports of the deputy surveyor of the forest, about the same number were destroyed, allowing the same calculation for those eaten by vermin, &c.: in addition to which, it should be mentioned that these mice were found to eat each other when their food fell short in winter. Buffon mentions this circumstance, and adds, that they not only devour the smaller of their own species, but also another description of mice, which he calls Campagnols. Putting these circumstances together, the total destruction of mice in the two forests in question would probably amount to more than two hundred thousand. This calculation is made from official weekly returns and other correspondence, and will show the enormous increase of these animals in a few months, as their depredations and destruction were equally sudden.

There were two descriptions of these mice. One of them, called by Buffon *Mulot*, is our long tailed field-mouse*. The other was a short tailed mouse, and seems to have been the 'Compagnol' of Buffon, from the Italian 'Compagnolo,' or the 'Mulot a courte queue.' There were about fifty of these latter taken to one of the former. The long-tailed mice had all white breasts, and the tail was about the same length as the body. One of them, caught in Haywood Enclosure, Dean Forest, was nearly as large as a weasel, and the back of its neck was beautifully mottled. These latter mice were chiefly caught on the wet greens in the forest, and the short-tailed both on wet as well as dry ground.

The short-tailed mouse has a much thicker head than the long-tailed one, and its ears are very short, and almost hid in the hair. Its body is about three inches long, and the tail one inch. The upper part of the body is of a reddish brown, and the belly a deep ash color. Their runs and nests are under the surface of the ground. They produce seven and eight, and in some instances nine young at a time.

Amongst the birds of prey which made their appearance in Dean Forest during the time the mice were in the greatest numbers, was a small white owl. None of these birds had previously been observed in the forest, but in the space of a few months several were seen, and were considered to be the most destructive of any of the winged enemies of the mice. It was stated in a letter from a gentleman residing in the forest, that under the roost of one of these owls, in an enclosure called Birchwood, there were at least fifty mice, which had passed through the owl *whole*. This assertion was repeated in some subsequent correspondence, though it is probable that the pellets which owls cast up were mistaken for mice. These owls are described as smaller than the brown owl, and as having a kind of ruff round the head.

Specimens of the mice taken in Dean and the New Forest were sent to Sir Joseph Banks, with an account of their depredations. In his answer he says, 'I have received a liberal supply of the mischievous vermin. The short-tailed field-mouse of Pennant and the field-mouse of the same author are, I believe, the same as those sent; but I am not quite certain, because Pennant describes his field-mouse as having a tail longer than its body, and the breast of an ochre color. But those that I received have their tails of the same length as the body—the breast white. I incline to conclude that they are young animals, and that the old ones will answer Pennant's description.

'I trust that it will be ascertained which of the animals is the enemy to planting that is complained of. The proportionate quantities of each will be an object also of inquiry.

'I shall be glad to receive an account of the mischief the mice have done. I have not in any work met with an account of mice having been accused of barking trees, which makes the fact a valuable

* Le Rat a la grande queue; Mus cauda longissima.

addition, not only to natural history, but useful to all planters, who, when they are made aware of the nature of the obstacles presented to them, will have a better chance than otherwise would be the case of discovering a remedy.

'In speaking of shrew-mice, Pennant tells us that the root of the white hellebore and staves-acre* mixed with meal is a certain poison for them. If so, it may be well to attempt by the same means to destroy these enemies.'

In a subsequent letter Sir Joseph Banks says, 'On talking over the subject of the mice with a very intelligent practical man, he suggested an idea that the evil of young plants being barked by mice may be much more prevalent than we suppose it to be, though attributed to the teeth of rabbits and hares, instead of mice. He mentioned a wood of mine in *Derbyshire*, where abundance of young trees were planted, and the whole destroyed by rabbits, as my steward and himself supposed. Also much mischief in the woods of Lord Vernon at *Sudbury Hall* near Uttoxeter in the same county. In both these cases the trees were never barked higher than about six inches from the ground—as high as a mouse can reach; but a rabbit can as easily bark a tree a foot from the ground as an inch.

'The notion in my judgment is worthy of inquiry and verification. The officers of the forest can no doubt tell whether a rabbit and a hare confined themselves in barking to the lowest six inches, or reach with their teeth higher up.'

In answer to this suggestion it may be stated that there were no rabbits and very few hares in the enclosure in Dean Forest, so that the damage done to the plants could not have been occasioned by them. Besides, several of the forest woodmen and others attested that they had frequently seen the mice in the act of barking the trees, even at the height of three and four feet from the ground, having climbed up the trees to that distance.

In another letter from Sir Joseph Banks, he says, 'I have inquired far and near, and I cannot meet with any who have suffered by the barking of young trees who attributes the mischief to mice. The discovery therefore must prove advantageous to all planters.'

In one of the Dean Forest enclosures many old hollies had been cut down to clear the way for the plantations; and from them bushes consisting of many young shoots, had grown up. Almost all of these in one month of the year (September) were observed to be in a state of greater or less decay, some quite black, some turning yellow, whilst a few still remained green. Upon inspecting them it was found that the bark had been gnawed off more or less, and more or less recently according to the gradations of decay. The mice however barked indifferently young oaks, ash, beech, hollies, and willows, and but very few of the fir tribe.

In the pits made for catching the mice, they exhausted themselves in efforts to climb up the sides, so that by far the greater number of them were taken out dead. Many were drowned where the water partly filled the holes; but so little did they dread water, that ash was seen fresh barked, the bottom of which was surrounded with water in such a way, that one of the officers of the forest asserted, in an official report, that the mouse must have been actually swimming at the time of barking it. In the same report he also mentions his belief that the weasels, at the time they are preying on mice, swallow them whole, and that what they cannot digest, as the fur, &c., they void from their mouths in balls afterwards; so that it is scarcely ever perceptible where they have eaten their prey. In one of the retreats of a weasel ten mice were found; and another weasel was seen to run into its hole with a mouse in its mouth. It is probable however that they were brought there as food for the young. The weasel, I believe, generally sucks the blood of its prey, at least that of the larger animals.

It should be mentioned in conclusion that, in a plantation in Dean Forest, consisting of three hundred acres, not more than four or five plants were found which were not injured by the mice or indeed destroyed by them. Many of the plants bitten through were as thick as a man's arm; and the roots were gnawed so close to the stem, that some of the young trees were seen either reclining on one side, or level with the ground.

The following account will show the numbers of mice caught in the different enclosures in Dean Forest in three months from September to January, with the number of acres, and the proportion between the long and the short-tailed mice.

		Short-tailed.	Long-tailed.	
	Acres.	Mice.	Mice.	Total.
Haywood Enclosure	418	12,850	8	12,858
Oily Hill ditto	41	1,161	11	1,172
Crabtree Hill ditto	372	7,851		7,851
Park Hill ditto	113	2,665		2,665
Shutcastle ditto	163	484	33	517
Sallow Vallets ditto	386	1,361		1,361
Barnhill ditto	50		70	70
Birchwood ditto	50		3	3
Whitemead Park do.	100	1,559	15	1,574
Total Acres,	1,693	Total Mice,		28,071

I should not forget to mention that, in New Forest, foxes were frequently seen hunting after the mice, and eating them greedily.

THE MOLE.

From Jesse's Gleanings of Natural History.

The mole-hills which we see in fields and meadows are thrown up by the mole probably during its search for food. Little was known of the natural history of this animal, till a French naturalist, M. St. Hilaire, published lately some interesting particulars respecting it. The mole forms several under-ground passages; and the way she proceeds in doing this is as follows:—she first makes a *run* in various directions, by undermining the ground, and unites this and several others at one point, making, however, some of them larger than the others. M. St. Hilaire says that she finishes by arranging them with the most perfect symmetry, plastering the sides with great care; and when completed, it may be called her *encampment*. In the centre of these works she establishes herself, and appropriates a separate place to the reception of her young, which is in some respects differently constructed from her own. In order to render the respective habitations which she and her young occupy not liable to be injured by the rain, she makes them almost even with the ground, and higher up than the runs, which serve as drains, or

* A kind of larkspur.

channels, to carry off the water. She makes choice of the place of her abode with the greatest care, sometimes constructing it at the foot of a wall, or near a hedge or a tree, where it has the least chance of being broken in. This abode is sometimes protected by having a quantity of earth thrown over it, especially in light soils, where I have seen a mound almost large enough to fill a wheelbarrow. Sometimes, however, no earth is thrown up over the habitation. This precaution of the mole is very necessary, to prevent the places she has chosen for retreats for herself and her young from being trampled in. When a mole has occasion to make her run through a gateway, I have observed that she generally carries it as near as possible to the gate-post, where it is less likely to be injured. Some runs are so near the surface, that I have seen the ground crack during the animal's progress in working them. The bed for the young is composed of the blades of wheat, with which the mole forms a sort of mattress. Four hundred and two of them were counted in one nest, and all so fresh in their appearance, that they had been probably collected by this little animal in the course of two or three days. This shows not only her extraordinary industry, but the great depredation she must commit.

The mole is never known to work for food near the place which she has fixed upon for her abode. She labors to procure it about two hours in the morning, and as many in the evening, and then returns to her home or resting-place, which is so constructed, that she is instantly made aware of any danger. This effect is produced by forming the upper runs in a sort of circle, so as to communicate a vibration when anything passes over them. The mole then takes alarm, and escapes by one of her *safety* runs.

The mole is not often seen on the surface of the earth. I once, however, caught one, and turned it loose upon the lawn, the turf of which was on a bed of strong gravel, and particularly hard and dry. Notwithstanding these disadvantages, the mole contrived to bury itself almost in an instant, working into the earth by means of her snout and fins (for they can hardly be called feet) so fast, that the ground seemed to yield to her mere pressure.

The power of smelling in the mole is very acute; and it is supposed that this sense serves to direct her in the search of her food. She hunts after beetles and worms, which last she pursues eagerly, but not always successfully; for the earth-worm is aware of its danger, and quick in escaping from it. Her search for prey taking place in the morning and evening, when birds are more generally on their feed, must be the means of contributing greatly to their subsistence by driving worms to the surface of the earth, and furnishes another striking proof that the 'fowls of the air' have their food provided by an Almighty and superintending Providence in a variety of ways.

Le Court, who assisted M. St. Hilaire in his observations, and who appears to have been a sort of philosophical mole-catcher, was surprised when the naturalist expressed a doubt as to the mole seeing. He informed him that, in swimming rivers, they habitually guide themselves by their sight; but, in order to satisfy M. St. Hilaire on this point, he contrived the following experiment with him:—They made two openings in a dry tiled drain, at one of which several moles were successively introduced. Le Court took his stand at the other. If he stood quite still, the mole soon came out and escaped; but if, at the moment in which she showed herself at the hole, he moved only his thumb, she stopped and turned back. By repeating this as often as she re-appeared, the mole was kept imprisoned in the drain.

There has been a very general idea amongst our mole-catchers, that if the smallest drop of blood is taken from a mole, it occasions instant death. Le Court seems to account for this opinion in speaking of the fights which take place between the male moles, by saying, that if one is ever so slightly wounded in a vein near the ear, the wound is mortal.

In order to ascertain the rate at which a mole moved, he put in practice the following curious experiment:—He placed some slight sticks, with a little flag at the top of them, in the run of a mole, which he had previously ascertained by tracing it to be of considerable length, and along which the mole passed and re-passed four times a day in search of food. These sticks were placed at certain intervals in the run, so that if the mole touched them, the flag would instantly show it. He then introduced a horn at one extremity of the run, and blowing it loudly, frightened the animal; and she then went along the run at such a rate, moving the flags in her passage, that Le Court and his friends, who were stationed at intervals along the run to assist in the observation, considered that she went as fast as a horse could trot at its greatest speed.

Hunger in the mole is thought to be a more violent feeling than fear; and its appetite is singularly voracious. If it sees a bird near, it quits its hole—approaches as if to attack it; and if the bird pecks it, the mole retires towards its hole, and tempts the bird to follow. She then watches her opportunity—darts upon it—seizes it by the belly, which she tears open, assisting herself for that purpose with her *flaps*, and, thrusting her head into it, devours it. She drinks as greedily as she eats. The mole does not, like the mouse, lay up a store of food, as she preys on worms and various kinds of insects: she will also eat frogs, but will not touch a toad, if ever so hungry. A mole was tried with eggs and oysters, but refused to eat either. They will, however, eat fruit, and, Buffon says, acorns. If two moles are shut up together without food, the strongest will devour the weakest, even to the bones: nothing but the skin is left, which they never eat, and which, when one has killed the other, is always seen to be ripped up along the belly. It was found that ten or twelve hours was the longest time they could live without food. This fact seems to prove that the mole is not torpid in frosty weather, which Linnæus asserted she was. It is known that, in such seasons, worms, ants, and the larvæ of cock-chafers and beetles penetrate deep into the ground. It is probable, therefore, that the runs of the mole made in search of food are regulated, as to their depth, by the habits of the grubs on which she feeds. One would suppose, from the texture of its fur, which is particularly short and thick, that the mole is not very susceptible of cold. Indeed, its whole formation is admirably adapted to its mode of life.

It has been said that the mole, when the ground which it frequents is flooded, will climb up trees.

This, however, seems to be unnecessary, as I have seen it swim with perfect ease, which indeed Le Court had also observed.

ON THE CULTURE OF THE VIOLET CANE, AS A FOOD FOR CATTLE.

From the Southern Agriculturist.

Bonavisture, (Lou.) July 30, 1833.

Dear Sir:—Your letter of the 24th of June is before me. I am truly surprised to learn that there is a want of original matter from the planters of your State, as well as from the South generally. My time, for the last three years, has been so entirely occupied, in attention to my plantation, that it has been with diffiulty I could appropriate a sufficiency of it to the writing necessarily devolving upon me. I have no relaxation as yet, but I will endeavor to furnish you with something that will serve to fill up a few pages, though it may not instruct.

I am residing at present, in a district almost exclusively devoted to the cultivation of the sugar-cane, and where every one is so completely engrossed with his own affairs, as to afford but little opportunity for intercourse with each other; and our soil is so new and fertile as to require but little agricultural skill or knowledge, to insure an abundant return for the labor expended. It is known to you that nothing is more exhausting to the soil than sugar-cane, and yet, it is common here to find it in the same field for twelve or fifteen years successively, and yielding well all the while. With such a soil, you may readily suppose, very little attention is paid to manures, less to rotation of crops, and still less to the introduction of any thing like science among our planters. We, as a body, are very much embarrassed, owing to the three last fatal years, and the great want of a proper agricultural economy, consequently, few have leisure for any experiments, and many of those who would, for fear of failure, which would be ruin, will not attempt any improvement, in our present method of planting: nevertheless, I conceive, there is no staple grown in our country, the cultivation of which is so little understood as that of cane—it is a forced crop in this country, and there must be something to force its approach to maturity as nearly as possible in our climate, over and above what is practised in its cultivation, on the Islands and within the tropics. Still, we are with a few exceptions, pursuing the old island method, and from those store-houses of ignorance, the Spanish Islands, we annually import as new, something that has been known, tried, and rejected here, twenty times.

But, Sir, I am not disposed to send you an essay upon sugar planting: few of your readers are interested in it. I propose, however, to offer something that will enable your planters, through five months of the year, and those months from November to April, to keep fat cattle, horses and hogs, from one-eighth of the ground that will keep them on corn. If you will turn to page 351 of your journal of this year, (it is in your July number,) you will find it stated by Mr. Nicolau, of Georgia, that the tops from one acre of corn, will go as far as the corn from eight acres.* This is not the case with us, perhaps, because our corn is so much better than that grown on the low swamp lands of Georgia. But, Sir, I assure you, that an acre of the Violet-cane will furnish an abundance of food for thirty head of cattle twenty days, and if indulged with the tops, will keep them a month.

The Violet-cane is termed by some, the Red Ribbon, by others, the Brazilian-cane, but here, it is most generally known as the Violet. I do not know that it possesses nutritious properties in a superior degree to the Striped Ribbon, or the common Creole-cane, but I know, from actual experiment, that it is better suited to our climate, than either of the others—because it resists the actions of frost longer in the fall, will keep in matrass better, is not so liable to be injured by wet or cold in the ground after planting in the spring, rises sooner, and grows off with more rapidity and vigor in the early spring. If planted in strong land, it is apt to grow large, and a slight blow in September or October, will sometimes throw it on the ground, but this does not injure it half so much as it does the Striped Ribbon, whilst the Creole-cane is utterly destroyed by it. It affords more tillers, or shoots, from the original stalk; these put forth at an earlier period, and consequently, are much more likely to make the best of a short season, than those of a more dilatory character; its leaves are longer if not more abundant, are smooth, thick, and full of saccharine matter; when properly cured, they make an excellent hay or fodder, will not mildew and rot so soon as corn-blades, or hay from any of the grasses which we possess: the rind it harder, and its juices not so abundant as is afforded by any other variety, but they are richer, and more nutritious as animal food. The former quality is an objection, when the cane is to be used for sugar, and the power for expressing the juice, animal; but to those who have an engine, I consider it superior to any cane planted in Louisiana, especially if the soil be new and strong. Its progress to maturity, also is not so much affected by the seasons; its roots are larger and sink deeper into the earth than those of any other variety whatever; it resists our long summer droughts, and will continue to grow finely, whilst it seems equally unaffected by the wet seasons of spring and fall.

If things are not much altered since 1824, yours is a sad State for rearing stock, and particularly the lower section of it. It then, seemed to me, that this branch of rural economy was entirely neglected among you. The miserable skeletons that were to be seen culling a precarious subsistence along the road margins, were painful to one who delighted in fine cattle. Every thing seemed tortured to the utmost, to produce as much cotton as possible; and was I not fearful of touching a not yet cicatrised wound, I would charge to this very fact, much of the present agricultural distress of which you now complain. But yours is an intelligent and patriotic people; the energies and capacities which you possess, will not sleep. The example of such as Dr. Ravenel, and others, will be emulated, and I have no fears but that South-Carolina will be herself again.

In Louisiana, it has been considered impossible

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* Our correspondent is mistaken in this. Mr. Nicolau in his communication, observes, "I have found that eight acres of corn will support thirty head of cattle for sixteen days, and one acre of *cane* tops will go as far as these eight acres of corn." It is *cane*, and not corn tops, which he thinks so valuable.—[*Ed. So. Agr.*

to rear fine cattle. We have many difficulties to encounter; a long, warm and relaxing summer, a superabundance of musquitoes and flies, a scarcity of pasture land, and worse than all, the prevalence of the maggot among our live stock, during the months of July, August and September. But with all these, Louisiana is a choice stock country, as I have proven beyond doubt: all that is requisite, is attention There are now cows upon my place for which $250 have been offered, not three years old, of the pure Durham short horned breed, and believe me, sir, there is not a planter in Carolina, who will bestow the proper attention, that cannot have the same in three years.

The object of this communication is to endeavor to encourage your planters to make the experiment, of growing in abundance a proper food for their subsistence, during the winter and early spring months, and preparing a sufficiency of pasture for them during the remainder of the season; and to test my sincerity, I will furnish any gentleman this winter with a sufficiency of the Violet-cane to plant an ordinary square in his garden, (from which he can plant an acre the year succeeding,) free of charge, save the freight, from New-Orleans to Charleston. And when he will promise, that he will attend to them, and endeavor to improve the breed and condition of the cattle in the State, and state that he has ten cows, and pasturage sufficient for their entire support, I will present him with a full blooded short horned Durham yearling bull, and ship him to his order, Charleston.

I would direct the manner of planting the cane, but I presume this, as well as its cultivation, is understood there.

With great regard,

WILLIAM H. SPARKS.

ON THE CULTIVATION OF THE POTATO, WITH A VIEW TO OBTAINING GREATLY INCREASED CROPS; BY THE AUTHOR OF "THE DOMESTIC GARDENER'S MANUAL."

From the British Farmer's Magazine.

Above two hundred and forty years have elapsed since the introduction of the potato into the British isles. During that period it has been gradually making its way in the favor of the inhabitants; but its progress for a long time was very limited. So slight, indeed, was the estimation in which it was held, even after the era of the revolution, that we find the celebrated Evelyn, in the year 1699, giving directions to plant potatoes in the worst grounds. "Take them up," he says, "in November, for winter spending—there will enough remain for a stock, though they be ever so exactly gathered"

The potato began, however, to be extensively cultivated about the middle of the last century; and now it is grown in every farm and cottage garden, almost without exception.

If experience seemed to have proved, beyond a doubt, that this root may be deemed one of the most important vegetable productions; if, in the face of every assertion to the contrary, it be found a very valuable, and, generally speaking, a most salubrious article* of diet; and admirably adapted to supply nutritious food for animals and poultry; it becomes a matter of serious interest to determine with certainty, that mode of culture which shall at all times, and in all situations, tend to produce the heaviest crops, and of the finest quality.

The common mode of planting and cultivating the potato is known to every cottager and farming man; but that philosophic method which has recently been productive of enormous returns, may, perhaps, be referred chiefly, if not entirely, to the scientific President of the Horticultural Society. This method it is my object to describe, through the medium of your pages; but before I enter upon the detail of Mr. Knight's directions, I think it a duty to request the reader's attention to a few important results, the particulars of which have been stated to me in letters lately received from that gentleman. As facts, and very recent ones, they are peculiarly interesting, not only as they decisively show what may be, and has been effected during the late season, but also because they prove, to a demonstration, that science and hypothesis may go hand in hand with practice; and that, when the latter is founded upon the former, it loses altogether its empirical character, and becomes established upon the most unassailable basis.

Mr. Knight has observed, that he planted his potatoes upon a soil *naturally poor*, and very shallow, upon a rock full of fissures, *giving no more manure than is usually given to a crop of turnips*; the manure was mixed up with the soil, and not thrown into the drills at the time of planting. The plants suffered from drought during a part of the year; nevertheless, he had very good crops from many varieties. These varieties he had himself originated from seed, and they possess the important quality of *scarcely producing any blossoms*; and, therefore, the vital powers of the plant are entirely employed in the production and support of those tuberous processes—the potatoes—which are the sole object of the cultivator. The produce of two of the sorts is particularly stated to me, and is as follows: of the one, twenty-three tons, two hundred weight, seventy-six pounds; and the other, twenty tons, two hundred weight, one hundred and one pounds, per acre. Of four other varieties he observes, "the produce exceeded twenty tons each per acre, all of good quality." If the reader will reduce these weights to pounds, he will find them, (reckoning the yield at twenty tons only per acre) to amount to five hundred and sixty bushels, each of eighty pounds weight.

In the winter of 1831, I received a packet from Mr. Knight, enclosing several specimen potatoes raised by him. For the convenience of carriage, these were under the medium size, weighing about four ounces each; they were, however, perfect in form and growth. Eight of them were selected, and planted in a row, each widely apart one from the other. From these eight tubers, whose total weight was barely two pounds, I obtained a produce of one hundred and fifty-six potatoes,

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*It has been argued that the potato, at least under certain conditions, possesses a slightly poisonous quality. The idea may have originated in the botanic character of the plant: in fact, it is one of the family of the night shade—the *solanum tuberosum* of Linnæus, and of the old natural order *luridæ*, which included plants whose appearance was described as being "dusky, dismal, and gloomy." The genus or family *solanum*, is the type of that numerous tribe or order in the *natural* system, *solaneæ*, many of whose members exhibit great beauty of appearance, and possess very useful properties.

weighing, in all, sixty-nine pounds. Some roots yielded more than others; one was peculiarly prolific—it furnished eighteen pounds of potatoes, six of the largest of which weighed ten pounds.

Having thus adduced a few general facts, it remains to point out the mode of operation by which such large results may be obtained.

One of the chief, if not the primary, agents in effecting vegetable development and maturity, is light. Deprive a plant of *that*, and you either paralyze the operation of its vital principle, or induce imperfect and diseased action. The leaves of vegetables are the media upon which light acts; and, therefore, it should be the object of the gardener so to arrange his crops, that the utmost breadth of their foliage may be exposed to the full influence of the solar rays. Hence, the rows of potatoes ought *to point north and south;* for, in the first place, plants so exposed, command the greatest breadth and duration of light; and in the second, the sun at the time of his highest meridian altitude—that is, at the hour of noon—shines directly along the extent of the rows; his light is also most equally distributed upon the whole foliage as he approaches to, and recedes from the meridian. The perpendicularity of growth, which is of considerable importance to the complete success of the crop, is less likely to be disturbed by this mode of arrangement, than by any other that has heretofore been employed. It is generally the practice to plant small potatoes, or sets of larger tubers, cut with one or two eyes to each.—These sets are planted in rows from sixteen to twenty inches asunder, and the sets about half that distance, or nine inches apart, without any consideration being had to the aspect or direction of the rows. As the stems advance in growth they are very liable to fall over, and become entangled one with another, thus intercepting the solar light, which then acts unequally upon the disorderly masses of foliage. Hence the crops become very unequal in point of bulk and weight.

Mr. Knight's philosophical directions lead to a very different result. He recommends the planting of whole potatoes, and those only which are of fine medium size—none to be of less weight than four ounces; and he often prefers those which weigh six or eight ounces. The earlier sorts, and, indeed, all which seldom attain a greater height than two feet, are to be planted about four or five inches apart in the rows, centre from centre, the crown ends upward; the rows to be from two feet six inches to three feet asunder. The late potatoes, which produce a haulm above three feet in height, are to be placed five or six inches apart, centre from centre, in rows four or five feet asunder.

When potatoes are thus planted in rows pointing north and south, the utmost energy of the light will be exerted, not only upon the foliage of the plant, but upon the surface of the intervening spaces of ground. If we suppose that the main crops will be planted at the latter end of March, and during the month of April, the sun's meridian altitude will be advancing daily, for at least nine weeks; and during that period, the development and growth of the stem and leaves will be in a state of rapid progress. After the turn of days, and when the plants have attained their full growth, the sun will continue to exert its most powerful influence. Should the ground be of a proper texture and quality, the plants will stand erect, and the maturing process will proceed without interruption; and after favorable summers, wherein there have been regular and moderate supplies of rain, particularly during May and June; with a prevalence, however, of bright sunshine, the crops of potatoes will be regular, the tubers generally of a medium size, and the quality mealy, and altogether superior. If the soil be a strong mellow loam, enriched with much manure, the haulm will, in all probability, grow too rank, and finally fall over; nevertheless, the large spaces between the rows will greatly remedy this evil, for the sun's beams will act upon one surface at the least, and the matting and other injurious consequences resulting from close drilling will be prevented or obviated. I cannot refrain, in this place, from correcting an erroneous opinion, which almost universally prevails. We hear every where of potato plants running away to haulm, and thus expending their vital energy upon useless stem and foliage, instead of employing it in the production of tuberous roots. Now this remark is wholly opposed to philosophical fact, for invariably the strongest and heaviest bulk of potatoes is found attached to the most luxuriant haulm. The evil of over luxuriance is not to be referred to the paucity of tuberous product, for that is always great; it is a consequence of an over-rich soil, which causes the haulm to grow so tall as to fall over, become entangled, and thus to lose the maturing influence of light; hence, such haulm seldom ripens in due time, it remains green even in December; and the tubers, though large, numerous and heavy, are immature, void of mealiness, and vapid in flavor.

A fact of great importance to the growers of potatoes remains to be noticed. The *outside rows*, and all *single rows*, will be found to produce far greater crops than any of the interior rows of a plot in the garden or field. This depends upon a variety of causes, the chief of which is, the more perfect exposure of the foliage to the agency of air and light. Mr. Knight assures me, that he obtained from one outside row of an early seedling variety of the preceding year, which was two feet six inches exterior of an adjoining row, "*a produce equivalent to more than fifty-eight tons per acre.* No conclusions," he adds, "can be drawn from the amount of produce of an external row. I mention it only to show *the enormous influence of light.*"

In this philosophical remark I cordially acquiesce, because experience has established its truth to my own satisfaction. I therefore earnestly recommend every cultivator who has the opportunity of cropping upon long detached slips, in airy, open situations, to make the experiment of close planting in single rows, either whole potatoes, or well cut sets from very large potatoes, each to contain two eyes at the least. These sets should be taken from the crown end, or middle of the tuber, and not from the lower or root end; as I have found the latter to be comparatively unproductive. Sets may be planted at still less distances in the rows than whole tubers; and although the preference ought in all cases to be given to a southern direction, where such can be conveniently given, still, for absolutely single rows, it is not indispensably required, because air and light will act on each side of the stem and foliage, and there will be no intervening shadow.

The *soil* ought to be sandy and light, though moderately rich; that is, if fine, mealy and dry potatoes be required. It should not by any means be glutted with manure, and need not be deep. I have found no particular advantage in trenching for this crop; in fact, I am credibly informed by an observant gentleman, who has travelled extensively, that in North America, the finest potatoes are produced in extraordinary quantities upon grass meadows, by simply turning up the turf, inserting the potatoes, and reversing the turf by placing the grass surface downward upon them.

With respect to the properties of this vegetable, and the purposes to which it may be applied, the following observations of an eminent physician may not be deemed inappropriate. I extract them from the "Pharmacologia" of Dr. Pare:—

"Potatoes are found to produce

"First—Cottony flax from the stalk.

"Second—Sugar from the root.

"Third—Potass by combustion.

"Fourth—Vinegar from the apples.

"Fifth—Soap, or a substitute for bleaching, from the tubercles.

"And finally—When cooked by steam, the most farinaceous and economical of all vegetable food."

It is also known that much farina, or rather *amylum*, or starch, is yielded by grinding and washing the pulpy mass. My experiments in 1828 led me to ascertain, that a fine mealy sort yielded from one-eighth to one-seventh of the total weight of the potatoes. This starch may be employed as a substitute for that made from wheat; and as an article of diet, prepared as Indian arrow-root. It can also be introduced in making bread, though there is some dffiiculty in the manipulation. As food for all cattle of the farm—horses, cows, pigs, and likewise for poultry—potatoes are all but invaluable. Every creature appears to relish them; particularly when they are steamed or carefully boiled. It would be well worth the intelligent farmer's while to pay great attention to the use and effects of potatoes, raw and boiled. It is asserted that a cow may safely eat them in a raw state to the extent of, perhaps, fifty pounds per day, provided the eyes have broken and began to shoot. Whenever they be given raw, however, they should be chopped into pieces to prevent accidents. The utility of raw potatoes is, however, doubted by many, and therefore, the experiment requires close observation; perhaps straw, hay and chaff, might be employed as a very proper adjunct, with a few ounces of salt, added to each feed. Whenever steaming in the large way can be profitably employed, it must be an advantage for pigs and poultry particularly; and in all cases it would greatly tend to prevent the possibility of the danger of suffocation, which has been known to result from the hurry and greediness with which cattle devour the raw roots.

I am, Sir, yours, respectfully,

G. I. T.

December 18*th*, 1832.

ANSWER TO QUERIES ON TOBACCO, &c.

To the Editor of the Farmers' Register.

In the last Register, (No. 10) a correspondent from Warren County, North Carolina, requests a more detailed account of Mr. Old's plan of cultivating tobacco, by which the general improvement of his farm is reconciled with the growth of that destructive crop. It is hoped that Mr. Old, whose skill as a farmer is at *least* equalled by his capacity to convey to others his ideas on any subject, will be induced to furnish for the Register, a full account of his system. In the meantime, as I have called attention to his culture of tobacco, I will gratify your Warren correspondent as far as I am able. I did not state with sufficient clearness, in the communication in No. 7 of the Register, that the two lots designed for tobacco, must *first* be made very rich, if not naturally so.—The oats are then sown after the tobacco crop is taken off—and when ripe, are rolled down with a heavy roller, or else ploughed in—the first having been usually preferred. When rolled down, the crop (being a heavy one) affords a good covering to the land; besides which, they sprout and come up through the straw, forming a perfect covering to the earth. This is permitted to remain until the first favorable weather in the latter part of the winter. The land is then ploughed, and put into good tilth in the usual way. Mr. Old cultivates the Blue Prior Tobacco—tops to 12, 10, and 8 leaves successively—and permits it to be as ripe as possible before cutting. His lots are on low land—which is best, because, on account of its moisture, the plants live better when set out: otherwise, level high land is just as good. I have known Mr. Old to make 30,000 lbs. of tobacco from about 82,000 hills, one year—and 11,000 lbs. from 33,000 another year. These were his best crops—but they are uniformly good in quantity and quality. Having enlarged his farm lately, he has changed his plans, and has now three lots—interposing a crop of wheat and clover, between the crops of tobacco. Time has not yet shown whether this will do as well as the two lots with the oats—I don't think it will. He, however, gets a fine crop of wheat every third year, which may compensate for a less crop of tobacco. I will add, that Mr. Old's care of his tobacco, from the cutting to the prizing of it, is remarkable—to which is to be attributed, in part, the high prices he always gets. He is, moreover, a good manager of every thing he undertakes; and thus it may be, that the mere adoption of *one* of his plans, may not *insure* similar results. I am his neighbor, and have the benefit of observing his whole management, and yet, I must confess, my farm exhibits no such appearance as his—nor do my crops fill my pockets as well as do his. Yours, H. MEADE.

March 31, 1834.

For the Farmers' Register.

HESSIAN FLY—WEEVIL—CHEAT.

In page 351 of the 6th No. of the Register is inserted, a "simple method of destroying the Hessian fly," from the Canadian Courant. Many years past, I cut out of a paper the piece enclosed in this letter. This, with some desultory remarks of my own, is subjected to your control, as you may possibly consider it proper for publicity.

"*The Hessian Fly.*—This destructive insect is propagated from the eggs of the fly deposited on the grains of wheat when ripening; the truth of which I learned from actual observations. The fly may be seen by the middle of June, and from that time till wheat is cut, flying about and lighting upon ears of wheat. It deposits its eggs upon

the outer end of the grain, where they may be seen with a good microscope or optic glass; sometimes to the number of six or seven on one grain.

They remain there till the grain is sown. The warmth necessary to produce vegetation is sufficient to animate the insect. It bursts its shell and enters the shoot, where it lies in a torpid state till the next spring, except in some instances when wheat is sown early, the fly commences its ravages in the fall: when this is discovered, the best method is to turn sheep upon it and pasture it short, either in the fall or in the winter.

The most effectual way to check the propagation, is in preparing the seed before sown, which should be in the following manner:—Put your seed into a hogshead, tub or vat, and cover it with water; let it stand ten or twelve hours; then put off the water, put the wheat upon a barn floor, and sprinkle lime over, and with a shovel, mix it till it is well covered with lime. Let it remain in that state about twenty-four hours, and the eggs will be destroyed without any injury to the seed.

The following brief sketch of the observations which led to the discovery abovementioned, is given, that all who wish to be satisfied of the truth of it, may have ocular demonstration of the fact, if they will take the trouble. On viewing several grains of wheat in a microscope, something resembling the eggs of insects was observed upon them; twenty grains were selected with those appearances; they were put upon some raw cotton and a little earth in a tumbler of water, and observed every day; and on the day the grain opened and put forth its tender fibre, the insect burst from its shell and was not to be seen.

Ten days after, five of the grains with their roots and blades, were taken from the glass and carefully examined. In three of them the insects were found. The other fifteen remained, and overspread the top of the glass. They were preserved till spring, when, on examining, every stalk had an insect in it, some two, and one had four.

Twenty other grains were selected, and the lime applied for twelve hours. It was then washed, and the color of the eggs was changed, and being put into a glass, in like manner as the other, the wheat grew, but the eggs did not produce. The roots were transplanted and grew well, and ten bushels of wheat, limed as above, produced a good crop, while the neighboring fields suffered materially, and some were almost wholly destroyed by the fly. *A farmer of Bucks Co. Pa.*"

The fact stated in the above communication, induced me to believe it probable, that the egg of the fly might be deposited on the soft grain; and an occurrence eight years past, tended, as I think, to strengthen this notion. Having sowed a small part of my wheat in September, ten days after its appearance, being struck with its unhealthy appearance, I discovered, on examination, the maggot of the fly to abound, frequently six and eight to a spire; and by actual measurement, found at the least, one-third of the maggots two inches below the surface. At that time I considered it improbable, that all the eggs, producing these maggots at such a depth, had been deposited on the leaf or stalk, and that the maggots had crawled down thus low. A confirmation of this notion is also derived from a fact communicated by an intelligent and highly respected acquaintance, viz. that he has seen a chrysalis (in the "flaxseed state,") in the interior of a grain of wheat. I however admit that many, very many of the eggs are deposited on the growing wheat: but they may derive their origin from the preservation of eggs deposited in the soft wheat grain; and if so, any mode of destroying them in the grain, prior to seeding, will be found highly beneficial. Being but an indolent farmer, I have only once tried the plan of the Pennsylvania farmer; but neither soaked the wheat as long, nor suffered the wheat mixed with lime to lay as long as the receipt directs; but the fly did not abound in the crop from this seed, to the extent of former years.

The 6th No. also contains two articles on weevil, and I briefly state facts within my own knowledge, which seem clearly to prove, that the eggs of both species, are sometimes deposited on the growing grain. Many years ago, my father had planted a few grains of wheat of different varieties, to test their respective merits; and the product, when gathered, being rubbed out, was tied up in paper, deposited in a barrel of leaf tobacco about ten inches below the surface; and when taken out for seeding, one paper, I well remember, contained black weevil. I have several times selected from the field and rubbed out, on the same day, fine looking heads of wheat, in order to improve the crop by selected seed—tied up the grain in paper, deposited in a drawer of a desk placed in my dining room, and never unlocked but by myself, and yet the gray weevil has been often found in these samples. I have also frequently seen the shucks of flint corn perforated by the gray weevil, when standing on the stalk, in the month of October.

I will venture to state one more fact as to cheat.

My father-in-law, Col. John T. Woodford, removed to Kentucky in 1820, where he purchased a tract of land, containing a timothy meadow. In the fall of 1832, he visited me, and related, after hearing a conversation on this vexed question, the following fact. This meadow had been in timothy from 1817, had never been seeded in wheat from that period, had been grazed in the fall and winter regularly by cows, and had every year brought fine crops of hay, until 1831. In this year, the meadow was indeed capricious, for it brought cheat, and he said a greater growth of wheat was never seen by him. In 1832, however, it quietly returned to its old habits, and brought a very heavy crop of timothy.

Your readers will of course decide for themselves as to the cheat controversy; for myself, I have long been of opinion, that the Deity provided seed, "each after its own kind," and that when circumstances are favorable, or the reverse, that seeds vegetate, or continue dormant.

JOHN TAYLOR.

Caroline, March 30th, 1834.

ON HILL SIDE DITCHES.

To the Editor of the Farmers' Register.

Having just returned home from a small jaunt of eighty or an hundred miles, I find my table covered with many newspapers and several periodicals. Amongst them is the Farmers' Register; upon looking into the table of contents of which, I was directed to a piece headed "On hill side ditches, to prevent the washing of broken land."

Knowing the great utility of these ditches, from an experience of four or five years, and being ex-

ceedingly anxious to see them in general use by every farming individual of the community, I instantly turned to the communication, to see the wonderful success they must have met with, though I quickly saw that I should be disappointed; for I observed that the signature of my particular friend Wardsfork, of Charlotte, was appended to the essay, whose sentiments I knew to be very adverse to this new plan of improvement, long previous to the appearance of his piece.

Believing Wardsfork to be mistaken in his views upon the subject, and thinking his ideas more theoretical than he himself is disposed to imagine, I have thought it necessary to say a word or two in favor of these ditches, for fear that his arguments may induce many to pass over this valuable improvement, unnoticed and untried.

To show and to prove that the views of my friend are fallacious, and in a high degree theoretical, but little is necessary for me to say; for, as much might be gathered from his own communication as would be all sufficient. But lest it may be considered that I assume more to myself than what properly belongs to me, I will leave Wardsfork and his essay for the present, and proceed to state of these ditches, what I believe to be true and useful in speculation, and I know to be sound and efficacious in practice. Owning, as I do, three of as broken, hilly, and in many places, as gullied farms as any in middle Virginia, I think I have had ample opportunity to test, in the most conclusive manner, every possible expedient that could be devised to stop gullies and prevent the lands washing. It is sufficient to say, that I have tried almost every plan that I have yet seen published—and all to no purpose. It has been my habit for several years, for the purpose of stopping gullies, to throw brush, cornstalks, &c. into them—to make wattle and stone dams across them, plough over them in various ways, then haul all the manure that could be spared and spread it over the land—but all was of no account: for frequently, in less than a week, they were washed deeper than ever, and the fruits of all my labor swept down into the adjoining bottom.

Meeting then with such repeated disappointments, I was forced to abandon every plan, and to determine to throw away no more time nor labor upon the subject, but to suffer the gullies and the land through which they ran, to lie waste, till time should effect an improvement They were permitted to remain in this condition for about two years; when some one, (I do not now recollect who) informed me that hill side ditches would effectually stop every gully upon my farms. Thinking the plan a good one, from the idea I had taken of it, and being very desirous to effect this end, and restore my land to its original fertility, I resolved upon giving the experiment a fair trial: and upon occurrence of the first leisure moment, I repaired to the different places, and laid off some ditches according to the instructions I had received: and to my entire satisfaction, they answered every end for which they had been suggested. Nay, they exceeded my most sanguine expectations; for instead of gullies and barren land, are now to be seen some of as fine clover as grow upon any part of my farm.

Thus, to borrow in some degree my friend's phraseology, I would say, if you wish to stop ten, fifteen, or more gullies, construct two or three harmless little ditches, (pretty much upon the plan that Wardsfork would lay off his beds) inclining to the horizon about two inches in every ten feet, until you meet with the adjacent bottom, branch, or stream.* Experience tells me that the course of these ditches should be as short and as straight as the nature of the ground will permit: so that they may empty themselves quickly, in heavy showers of rain, and thus prevent the banks (which should be low) from breaking over.

Construct your ditches as is here directed, and I will warrant that they will not, and cannot wash; and I will insure that they will answer every end for which they are proposed, in the most convincing manner.

Before condemning the use of these ditches so prematurely, and in such round terms, Wardsfork should have shown that the evils of which he complains are the necessary and unavoidable consequences of their construction, under all circumstances. Then he would have made manifest that the principle upon which they are founded, was false—then he would have shown that the use of them was "temporizing with dangerous tamperings,"—then he would have proved that the agricultural interest speedily required an abandonment of a plan so pernicious, and an experiment so highly injurious. But this he did not, and could not do: and such an attempt would evidently have demolished the foundation upon which his own plan rested: for the mathematical axiom which declares that "things which are equal to the same thing, are equal to one another," is not more evident to my senses, than the identity of the two principles which govern the hill side ditches, and Wardsfork's bedding plan of improvement.

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A. B.

February 22d, 1834.

MR. JEFFERSON'S FARMING.

[The following extract from the travels of the Duke de la Rochefoucault Liancourt may be interesting to many readers, both on account of the subject, and as proceeding from a distinguished foreigner. We suspect, however, that the author mistook, in some respects, the system which Mr. Jefferson *intended* to introduce, for that which was actually in operation.]

Mr. Jefferson has divided all his land under culture into four farms, and every farm into seven fields of forty acres. Each farm consists, therefore, of two hundred and eighty acres. His system of rotation embraces seven years; and this is the reason why each farm has been divided into seven fields. In the first of these seven years, wheat is cultivated; in the second, Indian corn; in the third, peas or potatoes; in the fourth, vetches; in the fifth, wheat; and, in the sixth and seventh, clover. Thus, each of his fields yields some produce every year; and his rotation of successive culture, while it prepares the soil for the following crop, increases its produce. The abundance of clover, potatoes, peas, &c. will enable him to keep sufficient cattle for manuring his land, which at present receives hardly any dung at all, independent-

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* I have not yet had it in my power to see Mr. Bruce's communication, and therefore cannot avail myself of his views upon this subject.

ly of the great profit which he will in future derive from the sale of his cattle.

Each farm, under the direction of a particular steward or bailiff, is cultivated by four negroes, four negresses, four oxen, and four horses. The bailiffs, who in general manage their farms separately, assist each other during the harvest, as well as at any other time, when there is any pressing labor. The great declivity of the fields, which would render it extremely troublesome and tedious to carry the produce, even of each farm, to one common central point, has induced Mr. Jefferson to construct, on each field, a barn, sufficiently capacious to hold its produce in grain. The produce in forage is also housed there; but this is generally so great, that it becomes necessary to make stacks near the barns. The latter are constructed of trunks of trees, and the floors are boarded. The forests and slaves reduce the expense of these buildings to a mere trifle.

Mr. Jefferson possesses one of those excellent thrashing machines, which, a few years since, were invented in Scotland, and are already very common in England. This machine, the whole of which does not weigh two thousand pounds, is conveyed from one barn to another in a wagon, and thrashes from one hundred and twenty, to one hundred and fifty bushels a day. A worm, whose eggs are almost constantly deposited in the ear of the grain, renders it necessary to thrash the corn a short time after the harvest. In this case, the heat, occasioned by the mixture of grain with its envelope, from which it is disengaged, but with which it continues mixed, destroys the vital principle of the egg, and protects the corn from the inconveniencies of its being hatched. If the grain continued in the ears, without being speedily beaten, it would be destroyed by the worm, which would be excluded from the eggs. This scourge, however, spreads no farther northwards than the Potomac, and is bounded to the west by the Blue Mountains. A few weeks after the corn has been beaten, it is free from all danger, winnowed, and sent to market. The Virginia planters have generally their corn trodden out by horses; but this way is slow, and there is no country in the world where this operation requires more despatch than in this part of Virginia. Besides, the straw is bruised by the treading of horses. Mr. Jefferson hopes that his machine, which has already found some imitators among his neighbors, will be generally adopted in Virginia. In a country where all the inhabitants possess plenty of wood, this machine may be made at a very trifling expense.

DAIRY MANAGEMENT.

From the Transactions of the Essex (Mass.) Agricultural Society.

MARGARET WARDWELL'S STATEMENT.

To the Committee on the Dairy.

Gentlemen,—I offer for your examination a specimen of butter. One jar was filled in June—the other in September.

We have nine cows,—all of native breed, and from five to fifteen years old.

From the 1st of June to the 9th of July, I made three hundred pounds of butter.

I have made this season eight hundred and forty-eight pounds of butter, and five hundred and fifty pounds of cheese. I put down two hundred pounds in June and July, which I should have exhibited, had it not been that the scarcity of butter the month past, induced me to part with it.

We have had fourteen persons in the family through the season, who have used milk freely; and we have sold milk to four other families. Our cows have had no feed, but common pasturing. I annex a specification of the *times* and *quantities* in which the butter was made, which is attested to, by those who assisted in making it.

MARGARET WARDWELL.

Andover, (S. P.) Sept. 1831.

SPECIFICATION.

1831.

April	16	6	lbs.	May	31	14½	lbs.	July	18	10¾	lbs.
	21	8½	"	June	1	15	"		21	14½	"
	25	7½	"		4	12¼	"		26	8	"
	27	6½	"		6	14¼	"		30	16	"
May	2	9¼	"		8	15½	"	Aug.	3	15	"
	4	11¼	"		10	16¼	"		8	9	"
	6	11½	"		13	16½	"		12	12	"
	7	13½	"		15	17¼	"		20	10½	"
	10	12	"		17	16	"		25	6	"
	11	12½	"		20	16½	"		30	10½	"
	13	12	"		22	27	"	Sept.	3	14¾	"
	14	12½	"		25	15	"		6	14	"
	16	14	"		27	15	"		9	14¼	"
	18	14¼	"		29	16	"		12	14	"
	20	14½	"	July	1	15	"		14	16½	"
	23	13	"		4	14	"		16	13½	"
	24	11½	"		5	16	"		19	17½	"
	26	14½	"		6	15	"		23	14	"
	28	17¼	"		8	15	"		26	14	"
	30	13¾	"		9	14	"		27	14½	"
									28	7	"

ACCOUNT OF COMMON SALT.

From Kidd's Bridgewater Treatise.

It does not appear that the mineral kingdom contains a single species capable of being employed as food; but there is one mineral species which indirectly contributes to the nourishment of many other animals as well as man, and that is common salt, the flavor of which, to a certain extent, is not only grateful to the palate, but, practically speaking, mankind could not exist, or at least never have existed without the constant use of it. Thus, though employed in very small quantities at a time by any individual, and almost exclusively for the purpose either of preserving or of rendering his food more palatable, this substance may fairly be classed among the principal necessaries of life; and correspondently with this statement, we find that nature has supplied it in abundance, indeed, in profusion often, in various parts of the globe; for, to say nothing of those apparently inexhaustible masses which occur among the solid strata of the earth, and which have been constantly quarried through successive ages from the earliest records of history, the ocean itself is a never-failing source of this valuable substance. In other instances salt springs afford the means of a ready supply; and throughout a considerable part of the sandy districts of Africa and Asia the soil itself abounds with it. The abundant supply of common salt coincides with its extensive utility. It is every where indispensable to the comforts of man; and it is every where found, or easily obtained by him. And, though not to the same extent, the same observation holds with reference to many other natural saline compounds. Thus, carbonate

of potash, and natron or carbonate of soda, alum, borax, sal ammoniac, and sulphate of iron, or green vitriol, which are most extensively useful salts in many processes of the arts, are either found abundantly in various parts of the world, or may be obtained by very easy means: while a thousand other saline compounds, which are rarely of any practical importance, are scarcely known to exist in a native state.

THE CAUSE OF FARMERS.

From a Baccalaureate Address, pronounced at a commencement of the University of Nashville, Tenn. by Philip Lindsley, President.

"I care as little about names as any man. If the *name* of college or university be unsavory in the ears of the people or of the people's guardians and conscience keepers, let it be cashiered. Let our colleges and universities be called academies, lyceums, gymnasia, common schools, or popular intellectual workshops—or by any other republican appellation, if any more acceptable or less invidious can be invented. It is the thing—the substance—the knowledge—the mental enlargement and energy and power—that I would give to the people in as ample measure as possible. That they may be sovereign in fact as well as in name. That they may be capable of knowing and guarding and asserting their own rights and liberties, without the second sight of any political juggler or officious bankrupt Solomon.

"I would create here in Nashville, or in Knoxville, or in Memphis, or in each, a university or great common school—with accommodations for a thousand pupils—with able instructers, libraries, apparatus, and all manner of useful fixtures and appurtenances—at the expense of the commonwealth. Every poor youth, properly qualified, should be admitted to its privileges *gratis*. The rich might pay for their sons. But none should be excluded for want of means. If more than a thousand pupils should offer—enlarge the establishment or erect others upon the same plan. This would be a species of internal improvement worthy of the republic, and which would elevate Tennessee to a rank never yet attained by any people. And the Legislature which shall boldly lay the corner stone of such a magnificent temple of popular instruction, will deserve and will gain a glorious immortality, whatever may be the verdict of their constituents or of their contemporaries. Their magnanimous and enlightened patriotism will be celebrated a thousand lustrums after the petty interests and conflicts of this selfish generation shall be forgotton.

"I have asserted that colleges have done good, or that learning has been useful. That, like wealth and power, when possessed only by a few it has been often abused to the injury of others. That our college graduates have generally been the faithful sentinels and advocates of popular rights. That if any appear to be swerving from the straight path of rectitude, it is because they have discovered an ignorant mass on which to operate. That the only remedy for the evil—the only preventive of its recurrence and of its rapid increase—is the immediate education of a much larger proportion of the people. Not the giving them what is called a common school education—the most of them have this already—and it does not suffice. The man who can merely read and write is no match for the through-bred political gladiator. He cannot dispel the sophistry even of the village attorney or of the village gazette. He is just the man to be led astray by the newspaper essayist. And the newspaper is the very engine employed to gull the people who can read, but who are too ignorant to discriminate, to reason and to judge.

"None but enemies of the people will ever gravely maintain that a common school education, in the ordinary meaning of the phrase, is all they need. This would be virtually telling them to be hewers of wood and drawers of water under political task masters for ever. Why is it that our lawyers rule the nation, and fill all our lucrative offices, from the presidency downwards? Simply and solely because they can do something more than read and write. If our mechanics and farmers would enter the lists with our lawyers, they must acquire the same degree of intellectual power and address. Nor would this prove a very difficult achievement. Take the common run of our lawyers—and they are *no great things*. The mechanics and farmers might easily beat them at their own game and with their own weapons. If they did but understand their interests, they would unite with the schoolmaster, make common cause with him, and assert their natural rights and influence in society. Let them take this matter of schools and colleges into their own hands. Let them rally around our most respectable and meritorious, though poor, persecuted and much reviled university. Let them contribute the trifle of a hundred thousand dollars or so, to its funds, and send to it a few hundred of their clever youths to acquire the art of lawyer-fighting—and we shall soon see them at the head of affairs as they ought to be. This is the best advice that I can give them. If they prefer ignorance, and are determined to keep their sons in ignorance—then, farewell to all their greatness, and to all the dignity which their position might justly command. They may frown upon colleges—they may abuse them—they may starve them—they may scatter them to the winds—but they only sink themselves the lower in the general scale of humanity. Instead of training their own sons to illustrate their names and to adorn the commonwealth, they will become the spoil and the scorn of every European or eastern adventurer who may choose to settle among them. For they cannot interdict the ingress of as much talent and learning from abroad as will suffice to discharge those public and professional functions to which they would themselves be totally inadequate.

"I have been pleading the cause of farmers and mechanics for some ten or dozen years past. Because upon them, as enlightened, judicious, independent, patriotic citizens, depend the destinies of this republic. The question is, shall they lead or be led? Shall they arrest and put down the factious spirit of unprincipled ambition, or shall they tamely lend themselves as the instruments and the victims of its desperate and treasonable purposes? The crisis has arrived when the people must speak and act wisely and resolutely, or their ability to speak and to act, with decisive efficiency, will be lost for ever.

"The lawyers are now our sole political guides and instructers. They engross the learning of the country; I mean all that learning which is brought to bear on government, legislation and public pol-

icy—for the physicians rarely intermeddle in these affairs; and the clergy ought forever to be excluded by law, if not by a high sense of duty. Our farmers and mechanics therefore, who constitute the great body of the people, are governed by the lawyers. Now it is not in human nature, that in such a country as ours, there should not grow up a sort of professional aristocracy, which in time may become irresistible. Wherever there is a privileged order, no matter how constituted—whether like the *patrician* of ancient, or the *ecclesiastic* of modern Rome—it will, if not duly checked and counterbalanced, in the long run, become overbearing and tyrannical. I look to the college for a seasonable supply of countervailing agents. I look to a well educated independent yeomanry as the sheet anchor of the republic. I look forward to the period when it will not be deemed anti-republican for the college graduate to follow the plough; nor a seven day's wonder for the laborer to be intellectual and to comprehend the constitution of his country.

"I am not unfriendly to lawyers. I could say much in their praise, were I in the humor of pronouncing encomiums. In their proper sphere, they are useful and necessary. But that they should engross the legislative, judicial and executive functions of the government, is neither republican, nor, safe, nor upon any ground, defensible. There would be reason in the thing, if like the farmers, they composed a large numerical majority of the population But that a few thousand of any particular profession, class or order should rule over millions is as anomalous, and as inconsistent with the genius of our popular institutions, as would be an hereditary aristocracy possessing the same exclusive privilege. The farmers have no alternative but to yield their necks to the yoke, or to open up for their sons a great highway to the scientific halls of the university. Belonging, as I do, to their respectable fraternity by birth, by early association and by all the ties of kindred—the son of a laboring farmer, the brother of laboring farmers, and the father, it may be of laboring farmers and mechanics—I cannot be indifferent to their welfare even upon the most selfish considerations. But I feel conscious of a higher motive. I seek to elevate my country, by imparting to all her sons the noblest attributes of humanity. That we may be forever a nation of enlightened, generous, high-minded, self-governing freemen 'The envy and the admiration of the world.'

"Who, let me ask,—I put the question to this assembly—to the good people of Tennessee,—who will oppose our projected institution, designed, as it is, exclusively for the benefit of this people? I will tell you. It will be opposed by the faint-hearted, the cowardly, the ignorant the covetous; and by all the enemies of light, truth, virtue and human happiness It will be opposed by that description of selfish, arrogant, self-sufficient *would be* lords and Solomons, who exist in every petty village, and who always oppose what does not originate with themselves, or what is not submitted to their *own* wise management and control. It will be opposed by those who can, by any artifice or misrepresentation, convert the scheme into a political hobby to ride into office. It will be opposed by those who despair of getting out of it a job—a bargain—a money making speculation—some paltry private gain or advantage. But it will never be opposed by one honest man, by one honorable man, by one enlightened man, by one patriotic man, by one benevolent man, by one great and good man."

BONE MANURE.

Extract from a late English publication.

[The Long Island Star, when giving the following article, states, that the farmers of Long Island are beginning to understand the value of bone manure. Not the least use of it has yet been made in Virginia. Some of the intelligent "town farmers," who reside in Richmond or Petersburg, might profit greatly by the general neglect and consequent cheapness of this very rich manure.]

In several of the northern, as well as some of the midland counties, this excellent manure has been long used, progressively increasing in quantity from year to year, as experience taught its value. It is not a little extraordinary, that in many of the counties in the southern part of the kingdom, the farmers should be so long ignorant of its virtues; but since its introduction into Berkshire and Surrey, about five years ago, with complete success, many who were sceptical, have now become warm advocates for its general use; and ere long, the agriculturists of the counties around the metropolis at least, will be as loud in its praise as the experienced farmers of Lincolnshire, Yorkshire, and Nottinghamshire.

Of the use and advantage of this manure, we will now proceed to give a brief description, the result of our own experience.

No manure equals it for the turnip crop—Swedish, as well as all the other kinds. When land is dressed with bone manure, plants are rarely attacked by that dreadful destroyer of turnips, the fly; and even when subject to the depredation of that insect, they thrive so rapidly that they generally grow beyond its power of injury. It is almost needless to call to the recollection of the farmer the fields which he has seen devoured by that voracious insect, as soon as the plant appears. Now by using bones this evil will scarcely ever occur.

Bone manure is *cheap*, *light of carriage*, and possesses *strength* and *durability*—no slight recommendations.

First—It is *cheap*. An acre of land, however poor and barren, will produce a good crop of turnips, by expending sixty shillings in bone manure; and where the land is in good condition, an excellent crop will be obtained by using from thirty to forty shillings worth.

Secondly—It is *light of carriage*. One wagon will easily convey one hundred and thirty bushels. Let the average of land be estimated as requiring twenty bushels per acre, there will be enough in a wagon load for six acres. With a proper drill ten or twelve acres can be manured in one day. Here is an immense saving of labor, at a season of the year too, when so much is to be done by the farmer. If dung were to be had for nothing, and happened to be two miles from the field, the cartage alone would cost nearly as much as the whole amount of the bone dressing. But dung is sold in many parts of the kingdom at a high rate, the cost of it swallowing up not only the turnip crop, but a portion of that crop which follows. Where a large breadth of turnips is sown and where there is plenty of dung on the farm, how frequently do we see the best part of the season gone before half

the turnips are sown. The reason is obvious—the *cartage* of this species of manure has taken up the time.

Let us now consider, thirdly, the *strength and durability* of bone manure. It is strong enough to produce as fine, nay, a superior crop of turnips to that produced by the richest dung; and the crops of the three succeeding years will be quite as good as those following a crop of turnips from rich dung. In making these observations, we beg to be understood as not depreciating the value of dung as a manure. We admit that it is of immense importance; but we presume it will be conceded that few farmers have as much as they wish, and the majority have not half enough. If it be now asked, how these deficiencies of manure are to be supplied, we answer, by bone manure.

It would be a waste of time to enter into the question of carrying dung from large towns to a remote distance; but bone manure, from its lightness of carriage, is not liable to that objection. There is no farm, however remote, that may not partake of its advantages. Even the distance of twenty miles from a navigable river or canal will not be deemed too great to fetch it, seeing that one team will draw home sufficient to dress six acres of land. To those persons, then, *who have not as much dung as they would like to have*, and to those *who have not half as much*, bone manure will prove inestimable.

The best method of using this dressing is to drill it in with the seed. It may, however, be sown broad-cast with good effect. If drilled, it is better when the soil is well pulverized, to let the land remain just as left by the drill, without being harrowed or rolled. If the manure be used by broadcast, ten or fifteen bushels per acre extra should be sown. Where land is highly cultivated, from ten to sixteen bushels an acre drilled have been sufficient to produce excellent turnips. If the broadcast system be practised, the bone manure must be scattered after the land is ploughed; then let it be harrowed once, and the seed must next be sown. The land must then be harrowed as it may require.

For barley, or oats, the bone manure is very good, and particularly fine for winter or spring vetches, as well as peas of all kinds; also for wheat. It is still better for rye. With each of these crops, it may be either drilled in with the seed, or sown broad-cast—taking he precaution of using more, should the latter method be practised. The quantity used per acre, according as the soil is more or less fertile, varying from sixteen—the minimum—to forty bushels—the maximum—an acre.

The late Sir Joseph Banks esteemed bone manure highly for potatoes.

This manure, for the crops above enumerated, is adapted for all soils, except strong clay; but the lighter, the drier, and the warmer the soil is, the more will the good effects be manifested, and come quicker into operation.

As a dressing for grass land and young clover, on every kind of soil, clay, as well as the lighter species of land, it cannot be equalled. The proper periods for using it are, in the autumn, or very early in the spring, taking care to have the grass short, so that the manure may the more readily reach the roots. If used in meadows, the best time is immediately after the hay is cleared off. Fifty bushels an acre on grass land would have a beneficial effect, even to the tenth year. If a hundred bushels per acre were used on pasture lands, no more manure would be required for twenty years. It has the effect of producing white (dutch) clover, and other rich herbage, in the greatest abundance, upon which sheep and cattle thrive exceedingly. Worn out meadows, and gentlemen's parks, even where situated in the poorest soils, will derive an incalculable benefit from its fertilizing powers.

It may be advantageously used to be mixed up with any kind of ashes, or very rotten dung—about two-thirds ashes or dung, and one-third bones—after being mixed together, there will be a strong fermentation take place, which will cause the former to be almost as powerful as the bones. The bones will also decompose, and operate more speedily, than they otherwise would do. The horticulturists and florists, in their several departments, will find it excellent. No other manure will produce flowers so luxuriantly as this; and from its easiness of carriage, it may be conveyed into the parterre without injuring the walks. In hot and green houses it will be found of great use. In fact, whether used in the field or garden, it cannot be misapplied.

TO DESTROY RATS AND BIRDS.

From the New York Farmer.

Mr. Fleet—Take two ounces of Nux Vomica, bruise it in a mortar, pour on it one gallon of boiling water, and let it stand twelve hours, frequently stirring it—then pour into this liquid a peck of wheat, rye or corn; let is stand twelve hours longer, then scatter the corn in places frequented by mice, rats, squirrels or birds, and I presume we shall not soon hear of their depredations again. The Rev. Mr. Decrue, of the Georgical Dictionary, recommends one ounce of the seed of Cicuta, and I believe any part of the plant will answer the same purpose if treated in the same way, and it will prove an effectual remedy against the evil.

Yours, R. M. W.

DIKED MARSHES AND MALARIA.

To the Editor of the Farmers' Register.

My attention has been turned to the subject of dikes, years before you commenced your valuable work; but much more so of late, in consequence of the many excellent hints therein contained. No communication, however, has caused me more satisfaction, than the opinions of Sir John Sinclair, in your 9th No. p. 556, on the subject of malaria.

The fact of there being much sunken land on tide water, in Virginia, and owning much myself, has awakened a deep solicitude in regard to dikes; and an occurrence in Caroline County, which I will detail, induces me to endeavor to turn the attention of Virginia to this important topic, as many, besides myself, may be deterred from draining, until the rights of land-holders are defined, or settled by legislative interference

The late Col John Taylor of Caroline, expended much labor in attempting to reclaim about 140 acres of land, more than half of it being exposed to tide water; and though not entirely successful, raised corn profitably on the larger portion. His widow persevered, and the embankment was presented as a nuisance by the grand jury. The

presentment was however quashed from error in wording it. His grandson, the present owner, determined to make a spirited effort to succeed by improving the ditches, and erecting a splash wheel. The attempt to present was reiterated, but failed, by nearly an unanimous vote of the grand jury. An injunction was then obtained of the judge, to stay all the proprietor's proceedings; and thus it remains.

The plea of its opponents, is, that the malaria thence arising, causes unhealthiness to the neighbors. The cutting down of forests, and reclaiming of sunken land, I have been taught to believe, would always make a country more healthy; and Sir John Sinclair, I am pleased to see, is an able advocate of this doctrine. The question at issue, is, can a farmer drain swamps, or reclaim marshes by dikes? And I deem it worthy of the attention of our legislature. The enclosing system, even clover raising, or any other improvement, causing an increased growth of vegetable matter, may hereafter meet with similar opposition. Few of our farmers will attempt to reclaim marshes, if liable to presentments, or injunctions, more especially as I am told, injunctions may be perpetuated. Has a judge the right thus to interpose in the management of private property? If he has, the value of the tide water lands in Virginia, will certainly be much impaired, and it is time to have a fixed rule, in lieu of the opinion of a judge or jury, both of whom may change their opinions at will.

VIATOR.

March 1*st*, 1834.

ON RETAINING RAIN WATER ON HILL SIDES, AND PREVENTING ITS ACCUMULATION, AND WASHING THE LAND.

To the Editor of the Farmers' Register.

Not long since, while reading an account of the life and labors of a pious minister of the gospel, whose lot was cast among a people, who procured a precarious subsistence, at the expense of severe exertion, and who had been driven by persecution, to an almost inaccessible location, near the summit of, perhaps, the Alps or Pyrenees, I was forcibly impressed with a sentiment advanced by the excellent pastor, to induce his flock to exert their energy and enterprize, in order to obtain a better provision, and thereby enable them to devote more time to their spiritual welfare. They were extremely poor, sometimes suffering for the necessaries of life. But notwithstanding their extreme poverty, resembling the more enlightened, but less pious professors of the present day, they were exceedingly fearful of, and averse to a change or innovation, either in their spiritual or temporal concerns—and they ignorantly opposed the plans of their benevolent pastor for their welfare. He, however, finally dissipated their prejudices, and improved their condition by his persevering endeavors. The sentiment which operated on the mountaineers, and which attracted my attention in substance, was this—that it was a sinful waste of the gifts of a bountiful Creator, to suffer the streams and rivulets to pass away into the sea, and by our negligence or want of energy, to lose the benefits which might be derived from them by irrigation. Favorable circumstances caused the remark to be profitable to me. Excited by it, and an account of the improvement caused by a laborious scheme of irrigation carried into effect, by the advice and assistance of the pastor, I irrigated a small meadow of about five acres, from which I secured by estimation, from twelve to fifteen tons of hay. In the prosecution of the watering scheme for the present crop, it occurred to me, that it was possible in some measure to obtain the advantages of irrigation on our uplands—particularly to the corn crop, which needs it most. On consideration, I arrived at the following conclusion; that although we cannot justify the expensive operation of conducting our streams, even when practicable, on our uplands, we yet may obtain some of the benefits of irrigation, combined with other advantages, by the following expedient. In the last working, on the bedding plan, dams should be made across the water furrow, at the distance of ten or fifteen yards, in order to retain the water and prevent its accumulation to a single point, which is the cause of its breaking over the beds, and washing the land. For illustration, say the corn row, or bed, is one hundred yards long. If, from bad levelling, there is ten inches fall, (and there is commonly more,) the dams at ten yards, will reduce the fall to one inch, and the water will be equally distributed the whole length of the row; and consequently, it will take ten times the quantity of water to break over, with, as it would without the dams. I am fully convinced that the retention of the water, on almost all upland, will doubly repay for the labor of making the dams, besides effectually preventing all washing. In this prescription, the remedy is applied to the cause of the disease, or rather as a preventive medicine—to prevent accumulation, which is the cause of washing—and retain and distribute the rain water, for the nourishment of the crop. I have extended the operation to my oat crop. The work appears well. The labor is trifling. We performed the work on all the land subject to wash, with one-fourth of the field hands in one day. The ingenuity of our farmers and planters has been exercised, and various plans suggested, to carry off the water. Hill side conductors, beds, and various other plans are used to prevent washing. I would ask, why conduct the water off at all? why not retain it all in the beds; for the double purpose of preventing washing, and answering in some measure the purpose of irrigation? I have cultivated corn on the bedding plan, for fifteen years, and have never seen it suffer from too much water, after the last working. But on the contrary, the crop has always been curtailed, and sometimes almost destroyed, by the want of it. Then surely, the great object should be to retain, and not carry off the water. If the plan succeeds, it must prove a great improver, as the dams in the oat-land will remain to benefit the succeeding clover, or other grass crop. I only ask a trial before condemnation: and if this should fail, perhaps it may be the means of eliciting something good, from some more successful and scientific farmer than myself.

AGRICOLA.

LIME WATER FOR DESTROYING WORMS.

From the Scotsman.

The use of lime water for destroying worms was lately discovered, in a garden near Edinburgh, by the overflowing of a brook strongly impregnated with alkali from the refuse lime of the gas-works. Wherever the soil of the garden was reached by this water, it threw up myriads of worms, which never returned again to their holes.

FARMING, AND MANURES OF THE EASTERN SHORE OF VIRGINIA.

Eyreville, Northampton, March 22, 1834.

In compliance with your request, in the first number of your valuable Register, "that your friends and patrons should communicate such facts as were in their possession, calculated to advance our agricultural condition," I have undertaken it, although, I fear, I shall add but little to the furthering the object. I am a young farmer, and have had but few years experience: but those few years have convinced me, that industry and a proper attention to manuring, will work wonders in our heretofore abused and neglected lands. On my return from school, in Pennsylvania, where I had seen the mode of farming pursued by the industrious Germans of that state, I was struck with the poverty of my own county, and the miserably negligent mode pursued by our farmers, on the most grateful soil in the *world*—for you will find land here under cultivation, yielding a tolerable crop of oats and corn, which land has been in cultivation, for nearly a century, without the slightest aid from its possessors, subject to all the abuses possible, and deriving aid solely from the saline atmosphere, which is the great preserver of our lands. Being fully sensible of the necessity of doing something to improve the condition of my own farm, I determined to alter the mode of cultivation heretofore pursued, to attend particularly to manuring, and to cultivate *less land*. The practice here, as in many other counties of Virginia, is to divide our arable lands into two equal parts, the one for corn, the other for oats, alternating every year, leaving a small portion of land for a standing pasture, and that too poor to produce either corn, oats or grass, depending upon our (turned out) oat fields for summer pasturage, and our corn fields, after the crop is gathered, for winter pasturage, thereby keeping our lands under constant contribution. The farm I live on, has rather more upland pasture, (that is, worn-out cornfields,) and a great deal more marsh pasture, than most of the farms of the county possess; but with even this advantage, I found it impossible, from my stock and horses, to raise more manure, with the strictest attention to it, than would manure more than twelve or fourteen acres of land, together with my garden and small *truck patches*, such as of sweet potatoes, pumpkins, and the like. I therefore set about looking over my land for other means to supply the deficiency. I found around the margin of the creek, (for you must know my farm is surrounded on three sides by Cherrystone creek,) a vast number of little ravines, or sinks, formed by the tides, into which a great deposite of sea weed, grass, the decomposed leaves of trees, and the washings of the land, have accumulated. This I carted out in great quantities, together with the salt marsh turf, from which I derived great advantage, almost doubling my crop thereby. Soon after trying this, I met with a copy of Hales' Husbandry, in which he speaks of sea shells and their spawn as a manure. Our creek abounding in oysters, and having an innumerable quantity of oyster beds, or "rocks," I was determined to try some; and to my great satisfaction, I found the very thing I desired, within one hundred yards of one of my fields, which at low water, is entirely bare—about fifty feet wide and eight hundred yards long, (and how deep I am unable to say,) composed of decayed oysters, clams, and other shell fish with their decayed spawn, together with a great deposite of sea drift, and of course, salt. The size of the largest piece of shell, did not exceed that of a fifty cent piece. The top of the rock, to the depth of an inch and a half was of but little value, being subject to the action of the tide: but immediately under that, was a bed of the richest manure I ever saw. Being unprepared for my good luck, I could not take much advantage of it, and of course, could not make a trial of it, to any great extent. I managed, however, to get up about forty cart loads, (hauled by a single mule,) which I spread upon a measured acre of land, and found it answered my most sanguine expectations. The corn looked as well, and bore as well, as corn in the same lot on land highly manured from the stable and hog pen. This year it is in oats, and even at this early period, they have a much finer color, than those adjoining; my friends, however, say, it was not a fair trial, as the land previous to the dressing, was in fine condition; but the addition no doubt has improved it. This year, I have gone more fully into a trial of it, being better prepared with lighters, and other implements, and have manured about eight acres at the same rate on as *poor* land as *any* in the state, along side a piece, originally the same, under a heavy dressing of farm-pen and stable manure, at the rates of one hundred and eighty loads per acre, and have left on the other side, a small piece, without any dressing at all. The result of my experiment you shall have, when it is fully tested. There are thousands of these "rocks" or beds in the creek, though none whose shells have so completely gone to pieces as this one; but they would, no doubt, be as useful for manure, by being mashed or broken, or even spread on the land as they come from the river, as a great deal of mud and salt adhere to them.

I fear you might think from the commencement of my letter, that all our farmers pursue the same negligent course of farming, which is not the case; many of our farmers, have turned their attention to the improvement of their farms, and are using every means, to add to their limited stock of manure; and you would be astonished to see the returns from our lands, (which appear to be almost sand)—for the little labor and attention bestowed. And I firmly believe, there is no land in this, or in any other state, that yields so fair a return for the labor bestowed: for the soil is light and easy to cultivate, and where a little manure and proper attention have been bestowed, the crops are surprising.

W. S. EYRE.

[The oyster beds or shoals, described above, can scarcely fail to prove a valuable and important fund of manure, to many who are situated in like manner with Mr. Eyre. But it may not be useless to warn him, and others, that his experiment, which is in progress, is a very unfair, or imperfect test, of the value of the calcareous part of his manure, which is probably the most valuable part. The sea-weed, the remains of putrescent animal matter, and the rich mud, (probably containing much vegetable matter,) as they all furnish food for plants, will (like dung) best show effects on the poorest soil. But the broken shells alone, would be enabled to give but little evidence of their peculiar and great power

as a manure, on so barren a soil: and their principal early use, when thus applied together with putrescent matters, will be to preserve the latter to the soil. This fixing or preserving power of calcareous manure, is highly important: but its effects are not such as can be properly estimated in the first, or perhaps in the second crop. Calcareous manures *economise* and accumulate fertility--putrescent manures *spend* all they possess—unless, there is calcareous matter already in the soil, to prevent the entire waste.]

IMPROVED PRODUCTS OF GARDENING AND AGRICULTURE.

From *British Husbandry*, (in the Library of Useful Knowledge.)

The principles of gardening and of agriculture (confining the latter to tillage only, instead of the more extensive sense in which it is commonly understood) are nearly similar; both are directed to the cultivation of vegetable productions, and the only material distinction is, that the former embraces a larger range, extending indeed, through the aid of artificial heat, to the whole vegetable creation, and demanding more minute and scientific arrangement, with closer attention—while the latter is conducted on a broader scale, and is necessarily limited to those plants which flourish in the open air.

Through these arts, many herbs that were for ages regarded as weeds and others that were exotic, are now cultivated among the most valued, as well as the most common, of our esculent vegetables; while several of those now grown in the fields were, at no very distant period, either little known or considered as garden delicacies, and exclusively confined to the tables of the rich. There is still extant an ancient manual of cookery, entitled, "*The Forme of Cury*," supposed to have been compiled about the year 1390, by the master cooks of King Richard II., in which, although elaborate directions are given for the preparation of "*cabaches*," no mention is made of any other vegetables, except peas and beans, onions, leeks, and rapes; which latter were probably a species of turnip. Hume, indeed, tells us, that, "it was not until the end of the reign of Henry VIII. that any sallads, turnips, or other edible roots, were produced in England; the little of these vegetables that was used being imported from Holland and Flanders, so that Queen Catherine, when she wanted a sallad, was obliged to despatch a messenger thither on purpose."* Still later, we learn from an entry, dated in 1595, in the household book of the Cliffords, kept at Skipton Castle, in Yorkshire, that eleven shillings (a large sum in those days) were paid "*for vi cabishes and some caret-roots, bought at Hull*"—a seaport at the distance of full eighty miles; from which we may presume that they were imported, and purchased for some very particular occasion. In the commencement of the seventeenth century, one of the commonest of our present esculents, the potato, was regarded as so great a rarity, that it was only served in small quantities, and at the price of two shillings the pound, at the Queen's table; it was for a long time treated as a fruit, baked in pies with spices and wine, or eaten with sugar; and nearly two hundred years elapsed, from its introduction into this country, before it was cultivated as a field crop.

* History of England, chap. xxiii.

Since that time, through the progress of botanical science, and the efforts made for the improvement of horticulture, many productions of the south have been naturalized in this country, and the introduction of the hot-house has made us familiar with the rarest exotics. Still, various foreign vegetables remain strangers to our culture, though adapted to our climate, and even some, which are indigenous to our soil, have not yet been brought into use, or are only slowly obtaining attention. It is not, indeed, to foreign nations alone that we are to look for new species of plants. Those which we already possess become so improved by cultivation, that new varieties of the same race are constantly produced, until, at length, by continued melioration, the parent stock is either lost, or neglected, and a new generation is created. Thus it has been supposed that not one of the numerous kinds and varieties of fruit, now found in our gardens and orchards, are what they were in their aboriginal state, and several appear to be absolutely new formations, the offspring of accident, or skill, rather than the spontaneous productions of nature. We are even ignorant of the native country, and existence in a wild state, of some of the most important of our plants; but we know that improved flowers and fruits are the necessary production of improved culture, and that the offspring, in a greater or less degree, inherits the character of its parent; the austere crab of our woods has been converted into the golden pippin, and the numerous varieties of the plum can boast no other parent than our native sloe.* Thus also, notwithstanding the attention bestowed by the ancients on the products of their gardens, and the probability that they were acquainted with a great proportion of the vegetables still in use, yet botanists find it difficult to reconcile the generic qualities of many plants, as they are described by the Greek and Roman authors, with the properties of those of the same species with which we are acquainted; we may, therefore, confidently infer, that an ample and unexplored field for future discovery lies before us, in which nature does not seem to have placed any limits to the success of our labors, if properly applied.†

MACHINE FOR EXCAVATING EARTH.

From the Manchester [Eng.] Courier.

Mr. G. V. Palmer, of Worcester, has been ten years and upwards engaged in constructing an extraordinary engine to excavate earth, &c. for which he has taken out a patent. This engine works by steam, and is particularly adapted for cutting canals, levelling hills for railways, and removing large masses of earth. The engine cuts, at a single blow, six feet in width and three feet in depth—delivering on either side, or into carts, one ton and upwards per minute: it also cuts and sifts gravel in the same proportion for road-making. We understand it is of great simplicity of construction, and the weight of the engine does not exceed three tons.

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* Introduction to the Transactions of the Horticultural Society, and Journal of Science and the Arts, N.S., vol. i, p. 265.

† Beckman's History of Inventions, art. "*Kitchen Gardens*;" and Transactions of the Hort. Soc., Introd.

ON STRAIGHTENING THE BEDS OF STREAMS, AND THE NEED OF LEGISLATIVE AID FOR DRAINING.

To the Editor of the Farmers' Register.

While I do not presume to enter as a laborer in the field of splendid improvements, I have a very humble, but sincere desire, to see all practicable internal improvement prosper.

It seems to me a matter of much interest, especially to tobacco planters, that the rich bottoms on small streams should be rendered safe (to a common intent,) for cultivation. Many exertions are now, and have been for some time making, to effect this object. One of the greatest obstacles is found to be in the fact that there is little or no concert in those efforts; added to the fact, that there are no legal means by which a landholder owning land *above*, on a stream, can compel those *below* to open the bed of the stream, or straighten it; or even prevent his neighbor below from filling up the bed with timber, or other rubbish. This circumstance renders it almost useless for any one man to make an attempt to reclaim such lands, and is the principal cause why these fertile bottoms are almost useless. Indeed they are in most instances worse than useless; and are found to be nuisances, producing, probably, more disease, and death, than can be attributed to any other one cause. Such streams have generally a very circuitous bed, especially where the lowgrounds are wide, and the fall not great. The bed being filled up, makes them easily overflow their banks; which causes them to remain in woods, or to be abandoned, if cleared. The streams still smaller, having more fall, are cleared, and the hills and banks cultivated; and much mud is washed down to the margin of the main flat, forming bogs and pools of water, which cannot be drained, except the main stream could be generally opened—which, were it done, would render the whole arable: and the water being put in motion, would become comparatively clear and healthful. When we consider how large a proportion of the tobacco making country will answer this description, and how little tobacco can now be made any where but on these flats, it cannot appear a matter of very small importance to reduce them to cultivation. Neither can it be a matter of light consideration in regard to the general health of the country. Nor can the quantity of corn and other grain and grass that might and would be raised, be a matter of small importance to a country like ours. Were these streams straightened as much as they well might be in most instances, and kept constantly open, it would be found that these desirable objects would be readily attained. For where the land is most valuable, though the fall is not very great, there is little or no rock near the surface; and by straightening the channel, the fall, to the mile, would be at least doubled. The bed runs at least two miles, and in many instances much more, while a line along which a ditch might be easily carried, and not leave the lowgrounds, would not exceed one mile. Where the fall would average four feet to the mile, following the course of the stream, it would average eight feet to the mile, following the ditch. Doubling the fall, to the mile, will make great difference in the water's motion. And carrying the current in a straight line, will have a similar effect, though not in as great a degree. There would be numerous other advantages; such as the preventing the washing of the land, making the banks deeper, occupying much less space for the bed, taking less fencing, less room for turning, (which will reduce the quantity of shrubbing in a great degree,) and rendering the supply of water to meadows, mills, &c. much more regular and constant. For in running through a deep extensive bog, much water is taken in by the mud; and in running on so wide a surface, and so slowly, much more is evaporated by being exposed to the sun and air: so that in many instances, a stout stream is entirely stopped from running, in a hot dry season. That every man should straighten after this manner, would be more than I would say the law ought to do: because he might not be able. But it is what every man ought to do who can; and what almost every man would do who could, if his neighbor would carry it on, or if he had even the power to prevent his neighbor below, by any ready and efficient means, from suffering the bed to fill up. An action, perhaps, might lie to recover damages for neglect in this particular; but this would be too doubtful and slow. Might not the law appoint an overseer of the water course, in cases where the county court might think it needful, with powers similar to those of the overseer of the road—giving him the hands living on or near the stream, to keep the bed of the stream clear of obstructions? I think myself such a law would be a considerable internal improvement in a domestic way. Leaving this matter to the county courts to execute, or not, at their discretion, would enable those neighborhoods who desired it, to derive the benefits: and at the same time secure others from being troubled about it who did not wish, or find it to their interest to put the law in execution. It might be troublesome and useless, in some counties, for any thing I know; but I am sure it would not be found so in Charlotte—certainly not in many neighborhoods.

The above remarks were written about 1826, and carelessly thrown aside, but have been brought to mind by seeing a piece in the Farmers' Register, written about the same period, by a citizen of Nottoway, suggesting the propriety of some legislative provision in relation to this same subject. At the request of a friend, I have sent these very crude and imperfect views to you, in the hope that they might be of some service, by throwing out some hint that might be improved upon. Since writing the above remarks, I have ditched and diked considerably; and, should you think those remarks worthy the notice of your paper, I shall probably trouble you farther with my views, warning you against my mistakes, as well as informing you of any thing I may have found rightly done, and further arguments in favor of that, or some other legislative provisions, with a view to attaining the objects alluded to by the writer from Nottoway.

A CHARLOTTE MAN.

[We invite "A Charlotte Man" to resume his pen on this subject, as promised above. There are few processes in our farming operations more imperfect than draining, as usually performed. The great obstacle to to this improvement, however, is the *law*—and until a change of law will permit, but few plans of extensive

drainage can be executed, except at great cost, and in an imperfect manner.

There is, however, a law of Virginia (enacted about 1826,) which indirectly offers aid and encouragement to one important kind of drainage, that of mill-ponds—by authorizing canals to be dug through the lands of any neighboring proprietors, by the assessment and paying of all damages thereby incurred. Very little, if any use has been yet made of the privileges offered by this law; and it seems, indeed, that but few persons are aware of its being on the statute book. One valuable improvement of this kind has since been made in Hanover, under all the disadvantages of the absence of this law, because its existence was unknown to the person who was attempting, and succeeded in exchanging a pestilential pond, for a rich dry meadow, and obtaining at the same time, a far better supply of water power for his mill. The benefit is incalculable that might be derived to Eastern Virginia, by a recourse to this plan, wherever the locality admits of it. It is not many years ago, that a farm of 1200 acres was gained in Dinwiddie, by cutting a mill-dam which backed the water over that quantity of land—and other mill-ponds still remain, in neighboring counties, which severally cover 300 to 400 acres of swamp land. Of all the causes of autumnal diseases in Virginia, mill-ponds are the most general, and most efficient—and the destruction of all, which are not well supplied with water in summer, would be a great benefit to the community, even if no better water power was attainable by canals. There are many mill-ponds, the bottoms of which, if drained, would yield more corn, than the mills receive in toll, or perhaps, more than all the corn they grind in the year.

In the case of mill-ponds, the law, though permitting and aiding their drainage to a certain extent, in other respects, presents insuperable obstacles, by arraying opposing interests. In general, the owner of a mill does not own the land covered by the water of his pond—and therefore, he has no interest in draining it. He simply possesses (by law) the right of inundating his neighbors' lands, and of giving them the ague and fever every autumn—and enjoys the profit of the grinding, so dearly, though indirectly, paid for by others. Now the property in the bottom of a pond, which another has a right to keep full of water forever, and whose interest it served by doing so, is clearly not worth a cent. If the right to the bottom of the pond was vested in the mill owner, it would be conducive to his interest to lay it dry, and his neighbors would all thereby be benefitted, as well as himself. Yet if it was proposed so to vest this property, (*real* in law, but *ideal* in fact,) what a host of guardians of the "rights of property" would be awakened, and what loud and fierce denunciations of wrong and oppression would be uttered!]

THE VIRGINIA NATURAL SILK WORM.

[We are indebted to the last New England Farmer for the following curious piece of antiquity, which must be interesting to readers in the region of which these wonders were told. In the Farmers' Register, this poem after having been forgotten, as well as its subject, for nearly two centuries, will probably be read by some of the descendents of those whose enterprize or good fortune it was intended to commemorate—and who still bear the names inherited from 'Master William Wright of Nansemound,' 'worthy Bernard, that stout Colonel,' 'Mistress Garret and Mary Ward' or of 'noble Digs.' The lines are as much wanting in truth, as in poetical or correct language. Still they must correctly set forth the fact, that high hopes were once entertained of immense profits being attainable by the rearing of the insect described—and the result sufficiently shows the fallacy of these hopes. The 'most noble Virginian natural silk worm,' is still found, though rarely. The cocoon, though of less size than described by the author, is very large in comparison to the common silk worm. The worm changes to a very large moth or butterfly, having a single circular spot on each wing, and in that respect, is similar to (and perhaps is the same with) the Peacock butterfly described in the *Spectacle de la Nature*. We have seen, some of these butterflies, obtained from the cocoon, of a pale brown color. Others, similar in other respects, have been seen of a pale green, except the large circular spots just described, which in all were alike. It is still a subject worth inquiry, whether the labor of these insects, has ever been put to any actual use, or could be used to any profit.]

The following poem (says the editor of the New England Farmer,) is taken from a work, printed in London, in 1655, by John Streeter, entitled "*The reformed Virginia Silk Worm, Or, a Rare and New Discovery of a speedy way, and easie means, found out by a young Lady in England, she having made full proof thereof in May, anno, 1652. For the feeding of Silk-worms in the Woods, on the Mulberry-Tree-leaves in Virginia: Who after fourty dayes time, present their most rich golden-coloured silken Fleece, to the instant wonderful enriching of all the Planters there, requiring from them neither cost, labor, or hindrance in any of their other employments whatsoever. And also to the good hopes, that the Indians, seeing and finding that there is neither Art, Skill or Pains in the thing; they will readily set upon it, being by the benefit thereof inabled to buy of the English (in way of Truck for their Silk-bottoms) all those things that they most desire.*"

POEM

Upon the most Noble, Virginian natural Silk-Worm her wonderful, various, plentiful food; The infinite, speedy, great wealth she will produce to her protector; (in forty-five days the time of her feeding) with small labor, cost, or skill, (learnt in an houres space by any child.) The singular aptness of that rare Superlative Climate, in Breeding them on so many several kinds of trees in her Woods where they live, Feed and Spin, their mighty large, strange, double bottoms* of Silk: to the admiration of this our Old World; but to the exaltation and glory of incomparable Virginia, in the New.

* This word is synonymous with cocoon, as appears from the following extract from another part of the pamphlet. 'The Silk Bottome of the naturall Worme in *Virginia*, found there in the Woods, is ten Inches about, and six Inches in length to admiration; and whereas ours in *Europe* have their Sleave and loose Silke on the outside; and then in a more closer covering they intombe themselves. These rare Worms, before they inclose themselves up, fill with Silke the great emptinesse, and afterwards inclose themselves in the middle of it, so they have a double Bottom. The loose Sleave Silk is all on the outside of this compass, for if that were reckoned in, the compass of the Bottom would far exceed this proportion: But this is sufficient to be the Wonder of the whole World: to the Glory of the Creator, and Exaltation of VIRGINIA.'

WHERE Worms and Food doe naturally abound,
A Gallant Silken Trade must there be found:
Virginia excells the World in both,
Envie nor Malice can gaine say this troth
Many a man the causes faine would heare,
How these rare Worms came first or still come there.
Insects produced are by heat and moisture
Who in strange shapes and forms do oft appeare.
In Spring our trees the Caterpillers reare;
Their trees likewise these noble creatures beare.
And some proceed from eggs that scaped are
From their enemies sight, which thing is rare.
They feed not only on the Mulberry
Which in our World sole food is held to be
For all such precious Worms of that degree:
But Poplar, Plum, Crab, Oake and Apple tree,
Yea Cherry, and tree called Pohickery:
So on the Shrubs and Bushes feed full many
Her Worms are huge whose bottoms dare
With Lemmons of the largest size compare.
And twenty one of ours will sure poize less
Then one of theirs for weight and ponderousness.
Master *William Wright of Nansemound*
Found Bottoms above seven Inches round.
And though the Silk prove not all out so fine
As *Persian*, that's no let to the designe,
For since a thousand of our Bottoms make
But one pound of fine Silk, you'l ten pounds take
From theirs. If we at Thirty shillings sell
Our pound, for twenty they'l afford theirs well.
The paines that's taken is alike in either
But the gaines by theirs eight times greater:
Then, we confined are to the Mulberry
For food, their Worms have great Variety.
Her dainty colored flies and large Worms
In length and bigness do surpass men's Thumbs.
Whereas ours short of little fingers come.
Our flies come out in twenty days and lay
Eggs, theirs not still three hundred as they say
O wondrous thing! a Worm to fast so long
And then come out a painted Fly so strong.
Nine months full out our eggs unhatch't remaine
Nine daies in Spring makes theirs revive againe
A Planter (I wish they had him named)
A spoonfull eggs from one fly he gained
Which to five hundred at least amounted
So shortly endless they must be counted.
In *March* they first begin to live and feed
In *Aprill* they have done the Silken deed
The sweetest, pleasantst time in all the yeare.
You to this wealth the chanting Birds will cheare
And ten moneths time they leave you with great ease
To spend it in what profit you shall please.
Rare Worms who feeding five and forty daies
On leaves of sundry Plants and shrubs repaies
Their keepers with fine Silke which wants no strength
And yet extends itself some miles in length
And for the labour of a Man and Boy
They gaine you Sixty pounds which is no toy.
If you from birds protect them on the trees
(Their naturall mansions) 't will them best please
Your paines is spar'd in giving them the leaves
By which alone you gaine their Silken sleaves
For non-parrel *Virginia* in her Woods,
Brings forth as all men know these precious goods:
Where thousand fleeces fit for Princes Robes
On Virgin-trees shall hang in Silken Globes.
The noble Worm so hardy, strong and stout
No weather ill is able them to rout.
The reasons why the numbers are so small
The Cruell Birds devoure most of them all
When they are Worms, yea Eggs or Silken ball.
Most bottoms likewise on the leaves are spun
Both falling to the ground do perish soon
Those only found that spun are on the branch
Not by their care but providentiall chance
Which only show themselves when all is bare
To find in Summer any 'tis most rare.
If to prevent both dangers you intend
A Reedy-Arbour well will doe't, you'l find
Or slightest coverture in any kind
The skill and paines to all each Child can do;
As you shall find on triall tis most true.
And may in Wealth compare with rich *Peru*.
And for all Tooles that appertaine thereto
A Twelve-penny Reele is all it will cost you,
No wit, no strength, no purse, no stock will need
But eies and hands, the Worms to guard and feed.
And thus you see is done the Silken deed:
Which brings you so great wealth with so much speed.
Five hundred pounds worth of rich Silk, all know
Freights less than ten pounds in poore Tobacco
Silkes are no trash, no toy, nor Pedlars ware;
Staple, good, and ready chinke every where.
Twenty shillings a pound t' will yield you cleare
And Ships to fetch it will come flying there.
Queenes of the best edition need not scorne
In her owne Livery to serve this Worm:
Only to give her leaves is all she craves
And in reward with Silk shee'l make you brave.
Out of her rich belly by her mouth spun
Weaves it into a most curious bottom
Which by a Reele turning with hand of man
Is wholly wound off most neatly againe
To feed Silk Worms no Caling can disdaine
Seeing they yield you so much honest gaine
No imployment in the World so likely
To make so soone your loste Savage Wealthy.
For his Silk Bottoms in exchange shall have
From English, what he so needs, begs and craves
Red coats, hose, shooes, knives, they highly deeme
Jewes-Trumps, Bells, Beads, all toys, no less esteeme.
If all be thus the cause you now demand
Why hath this knowledge been thus long detained
And but now by the Ladies Books inflam'd
Ignorance of Planters so strange hath been
Till now ne're knew nor dreampt of this rich thing
Confest it is, that of't some they have seene
Regardlessly, but ne're did them esteeme.
Which loss of Wealth and Honour they'l regaine
And *Virgins* Counsell follow will amaine
The happy onset they this spring have made
Assures them all a stately pretious trade
Sir *Henry Chichly* that Heroick Knight
Affirms ther's not an ingenuous Wight
In *Virginia* but makes all speed he can
To be er'e long a Silken noble man.
And say, Colonel *Ludlow* certifies
That thence from Silk great profit will arise
Yea worthy *Bernard* that stout Colonel
Informes the Lady the work most facile
And of rich Silken stuffe, made shortly there
He hopes that he and others shall soon weare
So major *John Westrope* saith, Silk will be
A gallant designe for their brave Country.
Thunder was that, that some men onely doubt
But triall made this Spring puts that feare out
In all Lands where Worms are kept tis wonder
To hear that any were harm'd by thunder.
Their naturall Worm proves this more truer
Mr. *Gorge Lobs* that prudent old planter
Tells her that Worms ne're spun Silk daintier.
Lets give those Gentlewomen their full dues
Mistress *Garret* and *Burbage* for Silk clues
That Colonell's Wife need not farr to rove
Her Court affords a pleasant Mulberry Grove;
But noble *Digs* carries the bell away
(Lass! want of eggs made so small the essay)
His two *Armenians* from *Turky* sent
Are now most busy on his brave attempt
And had he stock sufficient for next yeare
Ten thousand pound of Silk would then appeare
And to the skies his worthy deeds upreare.
Loe here what mistress *Mary Ward* hath sent
And to her Lady Cosin she presents
Ten rare Bottoms took from her Apple tree

That all England may it beleeve and see.
Her honor'd Kins-man Esquire *Ferrar*
To confirme and make the wonder greater
Ten more likewise hath sent her, which he found
On stately Oakes, and Shrubs that kiss the ground
And Doctor *Russell* that learned Phisitian
Hath with his, made a full addition.
For things more slowly do affect the minde
Which eares do heare then those that ies do find
Now from smoke *Virginia* shall be raised
And throughout the World be duly praised.
Ah Blest be God that now in his due time
This Silken light apparently doth shine
Then come, Oh come with sacred Lays
Let us sound the Almighty's praise. J. F.

TO DESTROY ANTS ON PEACH TREES.

From the Corresponding Gardener's Magazine.

Take thin slices of wheaten bread (say ½ oz. weight,) dry it slowly, but well, that it may easily pulverize in a mortar; take ¾ oz. fine loaf sugar, pulverize it also; add to the two former ingredients ½ oz. of oxide of arsenic, commonly called levigated mercury; triturate the whole well in the mortar, then put it into a clean dry glass bottle: of course the bottle should be labelled with the word "Poison." Very small portions of this poison may be applied on fragments of glass or the flat side of an oyster shell. The smell of recent oyster shells is also an excellent decoy for ants. Small bell-glasses, such as are used to strike cuttings under, or small garden flower-pots, may be put over the deposite of poison, to prevent moisture from rendering it pasty, as well as to hinder any domestic animals from taking it. If small portions are laid down at intervals of four or six hours, it will not become glutinous, in which case the ants cannot separate it. If bell-glasses are used to cover the poison, any curious spectator may see the avidity with which the ants carry off the poison to feed their young. This preparation is equally efficacious for crickets. Gentlemen and gardeners should be aware that this mercurial poison is equally fatal to vegetable as animal life. Should it be laid on the surface of the soil, round the stem of an orange-tree or other plant, it will corrode the bark and alburnum, to the certain destruction of the plant.

ALTERATION OF SOILS.

From the Cultivator.

Extract from a communicatian of H. Hickock Esq. to the State Agricultural Society of New York.

"Some years since a lot of land came into my possession, on which much expense had been incurred to improve it as a garden without any success. The land was a coarse gravel, through which water would run as through a sieve. The gravel contained a portion of iron, which operated as a cement of its ingredients. I drew on to the lot several loads of clay, and a small quantity of leached ashes, the alkali in which might have had a little effect; manure from a horse stable, was spread over the whole, and the mass was turned under with a spade. The soil improved for three years, when it became perfect. Upon examination, no clay, and scarcely any gravel could be discovered. The soil, which had been extremely dry, was by this treatment supplied with an unaccustomed degree of moisture. The iron, which was the cement of the gravel, decomposed the water, absorbed its oxygen, and was converted into what is called iron rust. Thus the gravel was resolved into its original constituents, and combined with the other materials, formed a warm, dark and rich soil, at less expense than had been formerly laid out on it without any benefit.

"Many kinds of rocky knolls, whose bare summits disfigure our fields, may, often with very little trouble and expense, be converted into excellent soil. Of these kinds are soft granite, a soft variety of graywhack, a shelly and argillaceous limestone, and all the varieties commonly called slate-rock. Their conversion into soil may be effected in a variety of ways. A neighbor had his fields deformed with bare slate-rock knolls, he had also a large quantity of pomace, which lay as a nuisance against the building which contained his cider press; he was advised to cart the pomace on to the bare knolls in his fields. The rock which formed the knolls contained a portion of iron, and the advice was given, in expectation that the acid in the pomace, by its action on the iron, would effect the decomposition of the rock. He informed me that in one instance he had done so, that he had observed that the rock had mostly disappeared, but that he had been wholly at a loss to account for it. This was eight or ten years ago; he has since informed me that he had complied with the advice given, on a field which he had then ploughed up; and that whenever the plough touched the spots which had been covered with pomace, it sunk down to the beam, and that after it passed such spots it rose to the surface. In this instance, by the removal of a nuisance, more land was acquired, and an increase of crops, without any additional fence, and with less trouble in cultivation."

APPLICATION OF MANURES.

From the Cultivator.

Extracts from the Address to the State Agricultural Society, by the President, J. Buel.

"In regard to the question, in what condition are manures most economically applied, I am sensible that a difference of opinion exists, many contending, even on philosophical grounds, that it is most wise to apply them after they have undergone fermentation. If the question was merely, whether a load of fermented or unfermented dung is of the greatest intrinsic value, in ordinary cases the former would be entitled to the preference, because it contains the greatest quantity of vegetable food. But the correct way to state the question would be this: Will *five* loads of rotted manure impart greater fertility than *ten* loads that are unrotted? The numbers ought rather to be five and fifteen—for I think common dung suffers a diminution of two-thirds, instead of one-half, in volume, by a thorough process of rotting.* It will assist in determining the question if we ascertain what

* During the violent fermentation which is necessary for reducing farm-yard manure to the state in which it is called *short muck*, not only a large quantity of fluid, but of gaseous mat er, is lost; so much so that the dung is reduced one-half or two-thirds in weight, and the principal elastic matter disengaged in carbonic acid, with some ammonia; and both these, if retained by the moisture in the soil, as has been stated before, are capable of becoming a useful nourishment for plants.—*Davy.*

the manure parts with during fermentation, for it evidently loses much in weight as well as in bulk, and whether this lost matter would, if buried in the soil, have afforded food to the crop. For if it possessed no fertilizing property, the sooner it is got rid of the better, and we save the expense of transporting it to the field. But if it really consists of prepared or digested food, fitted for the organs and wants of plants, it is truly improvident to have it wasted and lost for all useful purposes. The latter is really the case.* The matter which escapes in fermentation is vegetable matter in a gaseous form, fitted by natural process, like chyle in the animal stomach, to enter into and become a constituent in a new generation of plants. It is principally carbonic acid gass, the aliment of vegetables and the true staff of vegetable life. It has been vegetable matter, and will become vegetable matter again when brought into contact with the mouths or roots of plants. Without resorting to chemical proofs or authorities to prove this, I will suggest a mode by which the matter can be satisfactorily settled. Let any farmer, in the spring, before yard manure ferments, put twenty-five loads in a pile to rot, and take another twenty-five loads to the field where he intends to plant his corn, spread it upon one acre, plough it well under, harrow the ground, and plant his seed. Let him plant another acre of corn along side this, *without manure.* As soon as the corn is harvested, carry on and spread the twenty-five loads of prepared or rotted manure left in the yard, or what remains of it, upon the acre not manured for corn, and sow both pieces to wheat. Unless my observation and practice have deceived me, he will find the result of the experiment to be this: the acre dressed with long manure will yield the most wheat, because the manure has been less exhausted in the process of summer rotting, and for the reason, that in cultivating the corn, it has become better incorporated with the soil—*and it will, besides, have yielded some twenty or thirty more bushels of corn, in consequence of the gases upon which the crop here fed and thrived,* but which in the yard were dissipated by the winds and lost.

Plants, like animals, require different modifications of food. In general, the plants which afford large stocks or roots, as corn, potatoes, turnips and clover, thrive best on the gases which are given off from dung in the process of fermentation—while those exclusively cultivated for their seeds, as wheat, barley, &c. are often prejudiced by these volatile parts, which cause a rank growth of straw without improving the seed. Hence the first mentioned crops may be fed on long manure without lessening its value for the second class, provided they immediately follow, and hence unfermented manures are most economically applied to hoed crops.

Different rules should govern in the application of fermented and unfermented manures. The latter should be buried at the bottom of the furrow with the plough—the former only superficially with the harrow. The reasons are these—unfermentated dung operates mechanically while undergoing fermentation, in rendering the recumbent soil porous and pervious to heat and air, the great agents of decomposition and nutrition, and the gaseous or volatile parts being specifically lighter than atmospheric air, *ascend,** and supply the wants of the young roots. The next ploughing turns the residue of the dung to the surface, when it benefits on a different principle; for fermented manures consist of ponderable substances, which have a tendency only to *descend.*

Manures possess a high value in all good farming districts, where the natural fertility of the soil has been impaired by culture. In most of our large towns it is bought up at one or two dollars a cord, and transported ten or twenty miles by land carriage, and much farther by water. So essential is it considered in Europe to profitable husbandry, that every material which imparts fertility is sedulously economised, and applied to the soil. Among other things, ship loads of bones are annually brought from the continent into Great Britian, and ground for manure. Bone dust is in such high demand in Scotch husbandry, that its price has advanced to 3*s.* 6*d.* sterling per bushel.

We possess no certain data to ascertain the saving which may be introduced into this branch of farm economy; yet if we put down the number of farms in the state at one-tenth of our population, or 200,000, and estimate that an average increase of five loads upon each farm might annually be made, it would give us a total of one million loads, which, at the very moderate price of 25 cents, would amount to $250,000 per annum.

Farm implements.—We must all have noticed the great improvements which a few years have made in the mechanic and manufacturing arts. Scarcely a process is managed as it was twenty years ago. Scarcely an old machine but has undergone improvements, or given place to a better model. Manufacturing operations have been simplified and abridged, and human labor has been reduced to a comparative cypher, by the substitution of machinery and the power of steam. The effect has been a great reduction in the price of manufactured commodities, and an increase in their consumption. We are assured that during the twelve years which elapsed between 1818 and 1830, Sheffield wares—hardware and cutlery—experienced an average reduction in price of sixty per cent., varying upon different articles from 40 to 85 per cent.† Cotton goods, books and various other fabrics, have undergone a reduction no less remarkable within our time. These beneficial changes have resulted in a great measure from the aid which science has either itself imparted, or which it has elicited from mechanic skill—for a

*As soon as dung begins to decompose, or rot, it throws off its volatile parts, which are the most valuable and most efficient. Dung which has fermented so as to become a mere soft cohesive mass, has generally lost from one-third to one-half of its most useful constituent elements. It evidently should be applied as soon as fermentation begins, that it may exert its full action upon the plant, and lose none of its nutritive powers.—*Davy.*

*A friend made this experiment: He trenched a quarter of his garden, and deposited a layer of *dry straw*, three inches thick, one foot below the surface, as the only manure, and planted it with water-melons. The crop, he said, was the finest he ever grew. On examining the straw in autumn, he found it was completely rotted, and reduced to the condition of short muck. He was satisfied that his melons had been highly benefitted by the straw while undergoing fermentation, and that had the straw rotted in the yard, the volatile portion of the manure would have been wholly lost.

†Babbage on the Economy of Machinery.

useful invention often awakens latent genius, and calls forth successful competition, even in the unlearned. No sooner is an improvement in the manufacturing arts announced, than it is adopted whenever it can be rendered beneficial—such is the facility of intercourse—such the desire—the necessity—*there*, of profiting from every discovery which benefits their art. The farmer is less able and less willing to keep pace with the march of intellect. He has few opportunities of becoming acquainted with the improvements of others, except by slow degrees; and he is so liable to be taken in by the catch-penny productions of the day, and is withal so distrustful of new experiments, that he will hardly venture to buy new implements and machines, nor to adopt new practices, however beneficial they might prove on trial. Mr. Coke tells us that his examples in farming, (and few men ever gave better,) only enlarged the circle of their influence about a mile in a year. Hence, as regards this branch of improvement, we have much to do ere we can overtake the spirit of the age, as exemplified in our sister arts.

Many of our farm implements have undergone improvement; yet there are others which have been either but partially introduced, or are hardly known, that are calculated to abridge labor and to increase the profits of the farm. There exists a great disparity in the quality of implements. In ploughs, for instance, there is a difference which eludes superficial observation, particularly in regard to the force required to propel them, that is worth regarding. I have seen this difference, in what have been termed good ploughs, amount to nearly fifty per cent., or one half. The perfection of our implements is intimately connected with a correct application of mechanical science, a branch of knowledge hitherto too little cultivated among us. Messrs. Many & Ward, the enterprising proprietors of an iron foundry in this city, have assured me that there are more than two hundred patterns of ploughs now in use in this state. Of this number some may be very good, but many must be comparatively bad. But what individual is able to decide upon their relative merits, or even to become acquainted with the different sorts? It would be rendering an important service to the state at large, and especially to the farming interests, if a competent board was appointed, comprising men of practical and scientific knowledge, to test thoroughly, by examination, and perfectly satisfactory trial, not only the ploughs, but the other implements of husbandry now in use, or which may be hereafter invented, and to publish the result of their examination, and certify their intrinsic and relative merits. Such board might meet once or twice in a year, and no inventor or vender who had confidence in the goodness of his machine would fail to repair to the place of trial. This would tend to call into action mechanical science and skill, in the confidence of receiving a just reward; the public would confide in the trial and opinions of the board; good implements would be extensively introduced and bad ones would be discarded. The expense of the examination would bear no proportion to the public benefit.

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Means for promoting the Improvement of Agriculture.

I have thus adverted, gentlemen, to those defects in our husbandry, to which I proposed at this time to call your attention, and have endeavored to show their magnitude, and the importance of applying efficient remedies. I will now call your attention to some of the available means of placing our agriculture on a more respectable and productive basis. The means which I shall particularly commend to your notice, may be embraced under the following heads:

1. A school, to illustrate the principles of science upon which the labors of agriculture are based, and to teach the best models of practice.
2. A more general diffusion of useful knowledge, in a cheap form, accessible to the humblest condition in life.
3. Agricultural associations; and,
4. The bestowment of pecuniary rewards, as stimulants to enterprise and industry.

I need not stop to dwell upon the advantages which learning affords to agricultural labor. Science may be defined a study of the immutable laws of the Creator, which govern and regulate mind and matter. The study of these laws, and their application to the wants and comforts of life, have for ages constituted one of the highest and most useful employments of man; and have contributed, more than any other human effort, to refine and elevate us above the grosser and degraded condition of savage life. The concentrated benefits of these labors are not proffered to our hands. The pleasures and the benefits which they impart, are held out as noble rewards to mental labor, in the same spirit that the blessings of health and competence are promised to him who "earns his bread by the sweat of the brow." Labor, mental or bodily, is the inseparable attendant of rational enjoyment. And is that knowledge to be contemned, which has done so much good to the world, and which has countless blessings yet in store for the human family? "In a *theological* view," says a late eminent writer* "science is nothing else than a rational inquiry into the arrangements and operations of the Almighty, in order to trace the perfections therein displayed. And what, continues our author, are the truths which science has discovered? They may be regarded as so many rays of celestial light descending from the great source of intelligence to illuminate the human mind in the knowledge of the Divine character and government, and to stimulate it to a still more vigorous exertion in similar investigations, just as the truths of revelation are so many emanations from the "Father of Lights," to enlighten the darkness, and to counteract the disorders of the *moral* world."

Our state may be compared to a great family, the members of which are employed in diversified pursuits, all designed and calculated to promote the common weal—having a common as well as individual object, and all united by reciprocal ties. In this light it is considered as respects crime and want. One is punished, and the other relieved, by common consent, and at the common charge. We have erected splendid and extensive establishments for the vicious and the poor. The county of Albany has been at greater expense for its poor than would be required of the state to establish and support a school of agriculture. Would it not evince both prudence and economy to endeavor to *prevent*, or to *lessen*, these growing evils in society, by devoting a portion of the common means to schools,

* Dick on the Improvement of Society by the diffusion of knowledge.

which should teach the hands useful labor, and imbue the heart with the love of virtue? The adage teaches, that "an ounce of prevention is worth a pound of cure." If ignorance be one of the chief causes of vice, and indolence the parent of want; and if knowledge be one of the mainsprings of virtuous conduct, and competence the sure reward of industry,—then the more knowledge is diffused, and the more that industry is encouraged, the less we shall be called upon to expend upon poor-houses and penitentiaries. It no longer admits of doubt, that knowledge and industry are the great conservators of public morals, as well as the great instruments of public wealth.

It has been remarked, that the more we provide for any one class, the more it will increase. This would seem to hold good in regard to the vicious propensities of our nature, and why not in regard to habits that are commendable and praiseworthy?

To speak practically. Our agriculture is greatly defective. It is susceptible of much improvement. How shall we effect this improvement? The old are *too old to learn*, or rather, to unlearn what have been the habits of their lives. The young cannot learn as they ought to learn, and as the public interests require, because we have no suitable school for their instruction. We have no place where they can learn the *principles* upon which the *practice* of agriculture is based—none where they can be instructed in all the modern improvements of the art. It is devoutly to be hoped, that our fathers in council, justly appreciating the importance of the subject, will add another to the proud trophies which New York has already won in the noble march of improvement, by properly responding to the correct views of this subject expressed in the message of our chief magistrate.

Our periodical publications, devoted to the interests of the agricultural and mechanical classes, have proved highly beneficial, and are daily enlarging the sphere of their influence. These benefits, however, may be greatly multiplied by a cheap work, adapted to the means of persons in humble circumstances, and to the economy of those who are able but unwilling to expend two or three dollars a year for an agricultural paper. It is believed there are more than 200,000 farmers in the state who read little or nothing calculated to improve their knowledge in the business by which they live. With the view of bringing this subject before the society, I have made inquiries as to the price at which a respectable publication of this character can be printed. The estimates have been predicated upon the supposition, that the editorial labors will be gratuitous,—that the subscriptions will uniformly be paid in advance,—that arrangements will be made to give it an extensive circulation, and that an edition of at least ten thousand copies will be disposed of. The result of my inquiries is, that a monthly publication of 16 quarto pages to each number, making 192 pages in a year, can be furnished in parcels of twenty or more, at twenty-five cents per annum. The postage to any place within the state will swell the cost to the subscriber to thirty-seven and a half cents per annum. An amount so trivial, as to win indifference, and to silence the objections of avarice. I submit to you, gentlemen, whether a more efficient mode of furthering one of the objects of our association,—the diffusion of useful knowledge—can be devised, than the one here presented. Through the liberality of two public-spirited and highly respected gentlemen, a specimen sheet of the proposed publication has been published, and has been submitted for public examination. Under the auspices of this society the *Cultivator* may be rendered a vehicle of useful knowledge, and a means of effecting great public good. I commend it to your guardian care.

MAPLE SUGAR.

From the Cultivator.

As the season for its manufacture is at hand, we venture to offer some suggestions upon the subject, having been somewhat of a sugar boiler in our younger days.

The first care should be to preserve the trees. It is not safe, in primitive woods, to cut away all the other timber, and to leave only the maples standing. In this way they are robbed of their protection, and are very liable to be prostrated by the wind. But trees growing in open situations adapt their forms to withstand the winds; and hence those which are termed second growth ought to be carefully preserved. Trees are often destroyed, in a few years, by injudicious *tapping*. We have seen them half girdled in a season, in order to increase the sap. The consequence is, that the wounds do not heal; the water lodges in the *boxes* and rots the wood; and the tree dies, or is broken off by the wind. A chisel and mallet are better than the axe to *tap* with, and a screw augur, two to five quarters in diameter, according to the size of the tree, is better than either—as the wound then soon closes, and little or no injury is inflicted on the tree. One or two holes may be bored on the south, and the like on the north side of the tree, if the size will warrant it. The holes at first should not exceed three quarters of an inch, and the slope upwards should be so much that the sap will run freely in frosty weather, and not, by a slow motion, be liable to freeze in the mouth of the orifice. When the flow of sap begins to slacken, the holes may be increased to the depth of two and a half inches, or the depth of the sap or white wood, and with an augur a quarter larger than was first used. The spout should not enter the whole more than half an inch; as the farther it enters the more the running sap is obstructed. In ordinary seasons the best time for making maple sugar is the last twelve days in March and the first twelve days in April. It must freeze at night and thaw in the day to constitute good sap-weather. A west wind is most favorable.

The next object is, to preserve the sap clean, and to do this, it is necessary to have clean vessels for its reception. The old way was to use troughs roughly cut from timber previously split through the centre. These answered tolerable well the first year. But being suffered to remain under the trees, they were often found when wanted the next year, filled with leaves, ice and filth, which unavoidably mingled with the sap. The best vessels for this purpose are wooden buckets, made broader at the top than at bottom, that they may be packed away in nests under cover when the sugar season is over, and thus preserved clean. We have seen them sold at $8 per hundred. They will last many years.

It is found beneficial to put into each half barrel

of sap a spoonful of slacked lime. This causes the impurities to rise better when boiling; which should be carefully skimmed off. The sap should be boiled before fermentation commences, which will happen, as the weather becomes warm, the second or third day. The greater the exposure of the surface to the atmosphere, when boiling, the greater will be the evaporation. When the sap has been reduced to a syrup, it should be strained through a woollen or hair cloth, and then stand a few hours to settle; after which it should be turned carefully off from the sediment which has settled at the bottom. In *boiling down*, charcoal is the best fuel to use; for although the heat should be pretty brisk, it should be equable, and be confined to the bottom of the kettle. The *clarifying materials* should be added at the commencement of this process. These are generally milk, eggs, or what is better, calves' blood. The scum which rises should be carefully taken off. The impurities attach to these mucilaginous materials, and are carried with them to the surface.

When the syrup is sufficiently reduced, and taken from the fire, it should be stirred well for some time, in order to give it *grain*. This is effected by bringing every part of the mass in contact with the atmosphere; for if turned into moulds immediately, and not stirred, it will not be grained, but resemble candy rather than sugar. If intended to be caked, it must be turned into moulds before cold. Under the best process there will be a portion which will not granulate, on account of the vegetable mucilage which it contains, but which will drain off if the cask in which the sugar is deposited has holes at its bottom through which it can pass. To prevent the sap or syrup rising, a piece of fat may be thrown in, or the inner rim of the kettle rubbed with a piece of fat pork.

Molasses and vinegar are generally made from the last runnings, as the sap is then less adapted for sugar, abounding more in mucilage as the buds of the tree swell, and being more liable to ferment. The molasses, when properly clarified, is superior to that from the sugar cane, having a peculiarly grateful flavor. The vinegar, though excellent for ordinary use, is not so well adapted for pickles as that made from cider.

HOW TO MAKE THE MOST OF A LITTLE LAND.

From the Genesee Farmer.

In the spring of 1830, I purchased in this city a house and lot; the lot was fifty by one hundred and twenty feet. One third of the lot was covered by the building. When I purchased, there was not a tree, shrub or plant, on the premises, notwithstanding the house had been constantly occupied for near forty years. I planted the first tree in the spring of 1831. I at that time planted three peach and three gage trees. One of the peach and the three gage trees bore fruit the past season. I have since added three more peach, four choice plum, one choice cherry, one quince, and four choice pear trees, which bid fair to bear fruit soon. I have also three fine grape vines, that will probably bear plentifully next season, judging from their size. I have also about a dozen smaller vines. I raised on the same ground the past season, cucumbers, beets, sallads, citron melons, and nasturtiums, in great abundance for family use and for pickling. I also had a great abundance of cabbage, both for summer and winter use. In addition to the above, I have at least fifty flowering shrubs and bushes, such as roses, syringoes, altheas, lilacs, snowballs, rows acacias, flowering almonds, cape jasmines, &c. &c., with a plenty of the honeysuckle. I have at least two thousand bulbous roots, such as hyacinths, tulips, crocuses, narcissus, &c. with equal that number of annual and biennial plants and flowers, and all of the aforementioned luxuries and necessaries are enjoyed from the spot of ground that has laid waste for so great a length of time. There is still another item of profit to be added to the foregoing list: nine tenths of the labor of cultivation has been performed with my own hands, morning and evening, when not engaged in my own regular business, unquestionably affording me a greater degree of health, and certainly a far greater degree of pleasure, than I should otherwise have enjoyed. I have also a lot in the rear of the above-mentioned, twenty-five by one hundred and twenty feet, on which there is a barn, cowshed, and pig-stye, covering forty by twenty-five feet, leaving eighty by twenty-five feet for cultivation. Around this I have a border of two feet wide, one fourth of which is occupied by currant bushes, one fourth by raspberry, one fourth as an asparagus bed, and one fourth for spinnage, for a cabbage plant bed, for early lettuce, &c. The centre is laid out in three squares of seventeen by twenty-three feet. The first square I plant with early potatoes, the second with Lima beans, and the third with sweet corn; of the two latter, I have a great supply for my family, and some for my neighbors. Potatoes we have of the finest kind, and in great abundance through the summer season. Last fall we put about four bushels in the cellar from the same patch. We were in the summer nine in family, in the winter eight. The edge of my border I planted with bush beans; and I do not recollect that I paid a single cent for vegetables, except for the articles of green peas, and a few carrots and parsnips, the latter two of which I did not have of my own in consequence of sowing bad seed. I give you the above statement of facts, with the hope that if you should think them worth publishing, some one person may be induced to try the experiment, when he will learn that it will not only afford him a source of profit, but one of great pleasure, to grow his own vegetables; and that, while by beautifying his yard, he is not only adding to his health and comforts, but, in most cases, adding very much to the value of his property.

M. HUDSON.

LETTER FROM EARL STIMSON TO JESSE BUEL.

From the Cultivator.

Galway, 18*th Dec.* 1833.

Dear Sir—In reply to yours of the 23d Nov., requesting some information in regard to the difference between good and bad farming, I submit the following facts:

When the land was first cleared in this town, being about forty-five years since, its timber consisted principally of beach, maple, elm, ash and baswood. The soil produced good crops of all kinds; but the farmers neglecting to save and apply their manure, the consequence was, that their crops decreased, and in about twenty-five years the land would not produce more than one half as much, on an average, as when it was first cleared,

and this half cost them more labor than when they got double the quantity of grain or grass.

The land I now till, at first, would not produce on an average, more than fifteen or twenty bushels of corn, ten or fifteen bushels of wheat, barley or rye, and from half a ton to one ton of hay per acre. I commenced making, saving and applying my manure in the most economical way on the surface, and ploughing shallow; and in ten or twelve years I found I had brought it back to its original state of fertility. My practice has been to turn over the soil in the fall or spring, spread eight or ten tons of barn yard manure on an acre, and then plant with corn; and to follow the corn with barley and grass seeds, putting three lbs. clover, and four of timothy seed on an acre; then let it lay two years to grass; then to go over with the same rotation of crops; and my third rotation was first wheat, second corn, third barley, to seed down with, applying about the same quantity of manure every time I turned over the sod. In this way, in the course of twenty years, I got some of my fields to yield from eighty to one hundred bushels of corn, thirty-five to forty bushels of wheat, fifty to sixty bushels of barley, and from two and an half to three and an half tons of hay per acre, and with less labor, except in harvesting, than when I did not raise only about one-third or one-quarter as much. I know from my own experience, that it does not cost one-half, if more than one third as much, to raise a bushel of grain by good husbandry, as it does by bad management.

The farmers have much improved their farms in this town since our state agricultural society was organized, and of course their crops have increased in proportion. *I have no doubt that the money which was appropriated by the state to encourage agriculture, has increased the wealth of this county* MORE THAN TWENTY PER CENT A YEAR *since*, yet there seems to be a want of enterprise with our farmers in promoting their true interest.

The crops in this town were generally good the last season, except corn, which owing to the unusually wet and cold season, did not yield more than one-third or one half of a usual crop. I planted a field of four acres, which was in my highest state of cultivation. Occupied as pasture I turned over the sod about the first of June, and planted it two feet eight inches apart, with eight rowed yellow corn. When the stalks were fit to cut, I had the curiosity to ascertain the weight of the corn and stalks on an acre, and found that I had 38,000 lbs. and 26,000 ears of corn. This was the heaviest growth I think that I ever raised, and I have no doubt that there was 150 or 160 bushels corn when fit to crib.

Respectfully yours, EARL STIMSON.

J. Buel, Esq.

THE CLAIMS OF AGRICULTURE TO LEGISLATIVE AID.

Extract from an Address to the Farmers of New York.

From the New York Farmer.

You are now petitioning, *humbly* petitioning your legislature to grant you a little portion, *merely a remnant* of that which you have placed in their hands, to educate your sons, and assist your daughters in the labors which they cheerfully bestow for the good of the whole.

You are virtually saying to your senators, legislators, a principal part of whom are composed of lawyers, merchants and professional men—gentlemen, we have built your public works; our bread and clothing, toil and cash, have completed your canals, added value to your lands, and rendered productive your other sources of revenue. Our toil, and the fruit of our labor, have also erected and adorned your public edifices, your halls of legislation, your court-houses, your offices, your churches, your colleges and academies, over which we have given you and your class a paramount control—will you be pleased, at our humble request, to give us back a little to assist us in our toil? We are more encouraged to do this, as your governor has condescendingly said that by feeding the animal that labors in the field he will do more work, and "benefit every other class!" *This must surely be true*, if it is any benefit to the man that labors in the mental and intellectual field, or in the shop or office, to have bread and clothing! Ah, farmers, had you a due proportion of members in your legislative halls, or could those who are there feel any confidence in your united support, they would before this have spoken with an authority that would have brought to your immediate benefit a *large portion* of that revenue which is the fruit of your toil; and you would have had an institution—yea, more than one—in progress, that would have elevated the character of that profession in which it is your duty and pleasure to labor; and in which your sons would be in a course of education to prepare them to render their labor more than doubly effective to increase the productions of the earth, and to prepare them, after they are produced, for the most pleasant and profitable use—where they would be educated so that their influence might be felt where influence is desirable!

EXTRACTS FROM BRITISH HUSBANDRY, PUBLISHED BY THE SOCIETY FOR THE DIFFUSION OF USEFUL KNOWLEDGE. *London*, 1832.

Improvements in Breeding Cattle.

But it is not to the patriotism of the farmer that we appeal. That is a motive called into operation only on great occasions; it governs none of the common actions of life, and has no influence over ordinary minds; neither is it necessary to our purpose. Self interest alone is a sufficient inducement to most men to exert themselves in their peculiar walk, and, if properly directed, it accomplishes the object of society as well as if they were swayed by higher principles of conduct. We, therefore, only mean to call attention to the fact, that, when pursued with skill and assiduity, husbandry offers one of the surest sources, not merely of independence, but of fortune; in proof of which assertion, numberless instances could be adduced of men now living in affluence, acquired solely by farming, as well as of others who have left large property to their heirs.

Among the latter, Bakewell stands foremost—not so much for the fortune which he realized, as for the important results of his experiments, as a breeder, both to the public, and to his numerous followers; inasmuch as the improvements which he effected in live-stock, or to which his example has led the way, have contributed largely to the increase of animal food, and opened a branch of farming as novel as it has proved lucrative. Efforts had, indeed, been made before his time, to

improve the different breeds; but they were comparatively feeble and ill-judged, until his penetration discovered the defects of the former system. He observed, that the moderate sized, compact, small-boned animals were generally in the best condition; he, therefore, endeavored to improve these desirable points, and to remove what he deemed blemishes; until, by slow degrees, but with great judgment and perseverance, he produced those varieties, of both cattle and sheep, which have since been distinctively termed, from his place of residence, the "*Dishley breeds.*' Such was his success, that, in one season, he received twelve hundred guineas for the hire of three rams, and two thousand for the use of seven; and, during several successive years, he never obtained less than three thousand for his entire letting. The spirit of emulation thus excited, and since so widely spread, gave rise to a singular division of labor among the sheep-breeders, who, until then, had usually been contented with the rams bred in their own flocks, but, from that period, it became a speculation to breed rams for the purpose of hiring them out. Some of these have been let so high as five hundred pounds for the season; one, the property of Mr. Buckley, was hired, in 1811, at a thousand; and, as the system has been extended from the Leicester to all the other favorite stocks, many of the "*Tup-masters*," as they are called, have profited largely by the innovation.* Equally extraordinary prices have been given for cattle of superior quality; and it will be remembered, that a Durham bull—*Comet*—belonging to Mr. Charles Colling, of Ketton, was actually sold, by public auction, for a thousand guineas.†

Of Bakewell's immediate disciples, the Messrs. Culley, of Northumberland, were the most distinguished. They were among the foremost promoters of all agricultural experiments; and their superior intelligence, unremitting industry, and judicious application of the capital they gradually acquired, enabled them—from small original means—to leave their respective families each in the enjoyment of landed property to the amount of nearly four thousand pounds per annum, besides having largely contributed to the welfare of the surrounding country.‡

Improvements in Tillage, &c.

To these examples must be added, that of one, less known perhaps, but not less worthy of imitation. The late Mr. Dawson, of Frogden, in Roxburgshire, was the son of a farmer in moderate circumstances. He was born in 1734; and after having assisted his father during some years, and having also obtained an insight into the English mode of farming, in Yorkshire and Essex, he took the lands of Frogden, and there commenced the plan of growing alternate crops of grain and grasses, or roots, and particularly of turnips, which he cultivated according to Tull's method. He was also the first to introduce the Norfolk mode of ploughing, with two horses abreast, into that part of the country; and, by perseverance in the prosecution of these improvements, he lived, not only materially to advance the husbandry of the neighboring district, but also to purchase a considerable estate, and to leave a numerous family in very great affluence. He is described by his biographer, as having been "exceedingly regular in his habits, and most correct and systematic in all his agricultural operations. His plans were the result of an enlightened and sober calculation, and were persisted in, spite of every difficulty and discouragement, till they were reduced to practice. Every one who knows the obstacles that are thrown in the way of all innovations in agriculture, by the sneers and prejudice of obstinacy and ignorance, and not unfrequently by the evil offices of jealousy and malevolence, must be aware, that none but men of very strong minds, and of unceasing activity, are able to surmount them: but such a man was Mr. Dawson."* Yet this, however praiseworthy, is only the character by which every man of business should be distinguished: it displays none of that high talent which is the gift of nature, and may deter, if not defy imitation; nor any of those great acquirements which are only to be attained by deep study and laborious research. Mr. Dawson's success was the simple result of the discernment with which he had adopted the improvements of others, combined with the application of good sense, observation, and persevering assiduity, to an object which requires no extraordinary ability; and it surely is in the power of every man of plain understanding, and equal determination in the same pursuit, to follow in his footsteps, if not to attain equal eminence. He must, however, divest himself of prejudice; nor reject improvements merely because they are innovations on the practice of his grandfather. Not that a farmer should try every new experiment that is proposed, far less adopt any novel plan without due consideration. But if, after having weighed its advantages and disadvantages, with its applicability to the soil and means at his command, the former should appear to predominate—then let him afford it a fair trial; and let him recollect, that if a short cut to fortune sometimes lead a man astray, yet no one ever arrived at distinction by slavishly following the beaten track.

It is, indeed, deeply to be lamented, that such distinguished examples have not been more generally followed. Notwithstanding the acknowledged stride which agriculture has made in this country within the last half century, yet no science has been slower in its progress towards perfection; and even admitting numberless existing instances of intelligence and spirited management among farmers of the higher class, it is still an undeniable fact, that the great mass are men of a very opposite description. Brought up without sufficient education to enable them to comprehend the first principles of their art, acquiring it mechanically, as a mere trade, and either too dull or too indolent to seek information from books, they reject every proposed improvement as the visionary schemes of mere theorists, and even neglect them after their value has been proved by experience. Thus they invariably pursue the same routine they have

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* Gen. View of the Agric. of the County of Leicester, pp. 248, 260.

† At this sale, which took place at Ketton, near Darlington, in October 1810, forty-seven head of cattle of the same breed, many of them calves, fetched the gross sum of 7168*l.* 7*s.* and at a subsequent sale at Brampton, in the same county, sixty-one head of similar stock, the property of Mr. Robert Colling, brought 7858*l.* 4*s.*

‡ Farmer's Magazine, vol. xiv. p. 274.

* Farmer's Magazine, vol. xvi, p. 168.

learned in their youth, and adhere, with the obstinacy of satisfied ignorance, to obsolete customs, as detrimental to their own interest as to that of their landlords and of the public; and thus it is, that the average produce of many parts of the kingdom is below that of other districts of not greater natural fertility, and that the husbandry of the south, though more favored by climate, is generally inferior to that of the north.

Book Farming.

It is too true, that this jealousy of written information has been in a great measure justified by many crude publications of inexperienced persons, and that the sneers of practical men at what they contemptuously call "*book-farming*," are not wholly groundless. Much injury has been done to the cause of agriculture by sanguine speculations, which have only led to expense and disappointment; but all works on agriculture are not of that character; nor should it be forgotten, that theory is the parent of practical knowledge, and that the very systems which farmers themselves adopt, were originally founded upon those theories which they so much affect to despise. Neither can it be denied, that systems grounded upon theory alone, unsupported by experiment, are properly viewed with distrust; for the most plausible reasoning upon the operations of nature, without accompanying proof deduced from facts, may lead to a wrong conclusion, and it is often difficult to separate that which is really useful from that which is merely visionary. The art of husbandry depends so much upon patient observation and the test of repeated trial, and is influenced by so many casualties beyond our control, that it would be rash to adopt any general rules as invariably applicable to the endless varieties of season, soil, and incidental circumstances. Prudence, therefore, dictates the necessity of caution; but ignorance is opposed to every change, from the mere want of judgment to discriminate between that which is purely speculative, and that which rests upon a more solid foundation.

The prejudices of farmers against all innovation upon their established habits are as old as agriculture itself. In the dark ages of superstition, a man who by any improved method contrived to grow larger crops than his fellows, was supposed to use supernatural means; and if he escaped prosecution as a wizard, was at least shrewdly suspected of dealings with a power whom his more pious neighbors carefully avoided. On the introduction of hops into this country, the city of London petitioned against their use, lest they should injure the beer; and with equal wisdom the Kentish farmers, whose land was overrun with coppice, and who are now so largely benefitted by their cultivation, objected to their growth "because they occasioned a spoile of wood for poles."* New implements have been opposed upon much the same principle as the objection made about a century ago in Scotland, and so humorously as well as truly related by Sir Walter Scott, to the use of the winnowing machine;† and at this hour, the farmers in a large midland county assign as a reason for making the hinder wheels of their wagons preposterously larger than the fore, "that it places the body on a level in going up-hill;" never reflecting, that it will have to come down again, or to move upon even ground.

Among numberless instances of a similar nature, it is told, that the late Duke of Bedford,—who, in his well-known zeal for the promotion of every agricultural improvement, took great pains to introduce the Norfolk manner of ploughing, with two horses abreast,—observing, while riding in the neighborhood of Woburn, one of his tenants at work, on that sandy soil, in the old-fashioned mode, with four at length, his Grace dismounted, yoked two of the horses together, and held the plough himself, explaining at the same time the advantages of the new method; but his disappointment may be imagined, when the man, instead of being at all convinced by his reasoning, replied, "that such a plan might answer with his Grace, but was *too expensive* for him!" To which it may be added, that, notwithstanding the obvious economy and handiness of this mode of applying all light soils, and that, on such land, it has been adopted on every gentleman's farm throughout the kingdom, yet, with this example before the farmers' eyes, it has not yet entirely superseded the ancient cumbersome and expensive team.

Even in the settled and customary management of a farm, unforeseen difficulties occur that baffle experience; and in some cases, the merely practical farmer, who relies solely upon that, will be at a loss for expedients which an acquaintance with the practice of others might enable him to supply. There is, in this respect, assuredly much to learn, and no great difficulty in the task. For the rising generation, a more enlarged system of education is obviously the surest means; but the farmer who has not had that advantage, may easily acquire a practical knowledge of the various modes of culture and of rearing stock pursued in other districts, by occasionally visiting them after seed time, and adopting Bakewell's advice—"*to see what others are doing.*" He will thus be enabled to compare, in the most effectual manner, their different fashions with his own; and it is in this manner, that the intelligent farmers of the North—of Northumberland and of Norfolk, have surpassed their brethren in active enterprise and improved husbandry.

There is an old and often repeated adage, that—

> "He who by the plough would thrive,
> Himself must either hold, or drive;

and this, which has become a prevalent opinion, has deterred many a man who has sought relief from the cares of trade in the retirement of the country from availing himself of the profit, as well as the amusement, which he might have derived from farming. It is unquestionably true, that the man who, from early habit, is capable of holding the plough, must have great advantage in the practical

* Harrison's 'Description of Englande,' book i. chap. xviii.

† 'Your leddyship and the steward hae been pleased to propose, that my son Cuddie suld work in the barn wi' a new-fangled machine for dighting the corn frae the chaff, thus impiously thwarting the will of divine Providence, by raising wind for your leddyship's ain particular use by human airt, instead of soliciting it by prayer, or waiting patiently for whatever dispensation of wind Providence was pleased to send upon the sheeling-hill." *Tales of my Landlord, Old Mortality*, chap. vii. It was introduced in the year 1710, from Holland, by Fletcher of Saltoun, and its use was publicly denounced from the pulpit, as impious.

knowledge of that most important operation, over him who has not himself stood between the stilts; and it is earnestly to be recommended, that every youth who is destined to a farming life should personally assist in all the labors of the field, as the surest means of enabling him to direct them hereafter with effect; but nothing can be more erroneous than the supposition that the continuance of the toil is necessary to success. Formerly, indeed, when husbandry was confined to one dull round of drudgery, and when farms were generally so small, that the profit depended as much upon the personal labor as the capacity of the tenant, it might be true: but since the introduction of the present improved modes of cultivation, the more systematic attention to live stock, and the enlarged size of farms; since, in fact, agriculture has become a science, rather than a mere mechanic art, the time of a man who occcupies sufficient land to employ only a few laborers, would be ill bestowed on manual toil. The axiom is not, indeed, always applied in its literal sense; but then it is construed to mean, that no man can hope to become a good farmer, who has not been bred to the business. Undoubtedly personal experience is necessary: but it may be acquired at much less expense of time and money than is commonly imagined, by any man who will seduously devote his powers of reflection to the principles, and his attention to the details of farming operations, with a firm resolution neither to relax in his exertions, nor to suffer himself to be daunted by disappointment in the commencement of his career. Such a man will be sure to succeed; and, as encouragement to perseverance, he may bear in mind, that many of the most eminent agriculturists, and those who have introduced the most important improvements in rural economy, were not orignally farmers.

Jethro Tull, the father of the drill husbandry, was bred to the law; but having a small estate in Berkshire, he afterwards devoted himself to its cultivation. He was unsuccessful as a farmer, and he indubitably carried his theory respecting the continued growth of corn, without the intervention of fallows or green crops, too far. But the merit of his system of tillage, and especially that of horse-hoeing, on those soils to which it is applicable, has nevertheless been generally admitted, although it was at first deemed visionary, and thirty years elapsed before it attracted practical attention. The original invention of the thrashing machine is also due to a lawyer—Mr. Menzies, a Scotch advocate: we owe the introduction of mangel wurtzel to Dr. Lettsom; and the recent notice of fiorin to Dr. Richardson.

Both the late Arthur Young, and Marshall, whose writings have contributed so much to the diffusion of agricultural knowledge, were brought up to commerce; and it was not until the latter had attained to a mature period of life, that he turned his attention to the plough. He then, with little other previous preparation than what he had acquired from reading, entered upon a farm within ten miles of London, of three hundred acres of mixed soil, and which had been greatly mismanaged. This, for one so unpractised, was an arduous undertaking; yet within three months he discharged his bailiff, and became his own manager. The consequence, as might be expected, was, that he at first committed some blunders; but at the end of three years, he published his "*Minutes of Agriculture*," containing the memoranda of his operations from 1774 to 1777, which, although not free from error, yet show, that he had even then attained to a greater proficiency than most of his contemporaries: but, to use his own language, "*attendance and attention will make any man a farmer.*"*

The notion that farming is unprofitable to any other than "regular-bred farmers," has been strengthened by numerous examples of persons who embarked in it during the late war, without any previous experience, or any other incentive than an expectation, encouraged by the high prices of the day and the exaggerated representations of some agricultural writers, that it would prove an advantageous speculation. Impressed with that idea, they gave exorbitant rents for land; their stock was purchased at an equally extravagant rate; and when the markets declined, they incurred enormous loss. The publication on the agricultural state of the kingdom in 1816, drawn up from the replies to a circular letter on the subject by the Board of Agriculture, teems with accounts of farms thrown up in every county; and, in many cases, the stock and crops were sold at less than half their original cost.

To these instances are to be added those, constantly recurring, of men in easy circumstances, who, without any knowledge of either the theory or practice of husbandry, engage in it merely for amusement, and not condescending to stoop to the details, are exposed to numberless impositions of their tradesmen and servants. They pay higher wages, and obtain lower prices, than their neighbors; they grow large crops, but at an expense that the sale will not repay; and, retiring at length in disgust, they declare farming to be "a losing concern;" but without acknowledging that it only became so through their own improvidence.

That such failures, however, do not always occur, we have the evidence of a very competent judge, who, alluding to persons who, having been in other lines of business, yet having a strong inclination for rural occupation, had betaken themselves to farming as a profession, says—"this class forms the most intelligent and accurate of husbandmen. Like converts in religion, they have more zeal, give more application, in short, have fewer prejudices to surmount, and more enthusiasm for their new profession, than those who have been brought up in it from their infancy. They are, however, at the first outset, more liable to error or mistake, from the want of practice; but their indefatigable attention makes more than amends for their ignorance of the minutiæ of the art; and as they have been at some pains to acquire a knowledge in the theory of agriculture, and hence established their ideas on rational principles, they most commonly in the end make a distinguished appearance, as their labors, if judiciously performed, though often in a new and experimental channel, seldom fail of being crowned with success."† He adds, that one of the best farmers in the county of Middlesex was a retired tailor.

That farming, when properly attended to, is not unproductive even to gentlemen who cannot themselves superintend all its details, we may appeal to

* Digest of the Minutes, 4to., p. 63.

† Middleton's View of the Agriculture of Middlesex, 2d Edit., p. 59.

the more recent testimony of Mr. Gawler; who, under all the disadvantages of an indifferent soil, and a quantity of land inadequate to the charge of a bailiff, and pursuing an unostentatious system of husbandry, unmarked by any peculiarity of management or extraordinary expenditure, yet admits, in the very instructive account of his farm lately published, that he has succeeded in deriving a net average profit from its produce, much more considerable than any rent he could have obtained from a tenant; and has had, besides, the advantage of keeping the property in a state of neatness, the fences in a state of repair, and the land in progressive improvement, uninjured by exhaustion.*

It is, indeed, evident, that all those staple manufactures, which contribute to the supply of our absolute necessities, must always yield a fair return, upon an average of years, upon the capital employed, or they would be abandoned. Even the so much dreaded importation of foreign corn, would have no other permanent effect than to cause so much land to be thrown out of cultivation as, by diminishing the supply, would maintain prices at a remunerating rate; and farming would still continue upon the same footing as brewing and malting, or tanning and weaving, or any other of the great manufactures of the country. A temporary reduction of prices would no doubt ensue, farming-stock would suffer in proportion, and, if the alteration were sudden, much individual embarrassment would be created; but corn cannot long continue to be sold for less than it costs to produce it, and Great Britain must ever rely upon her own soil for the chief supply of her wants, for, were her ports thrown open to the unrestricted admission of grain, it is not in the power of the united surplus capital and industry of the world to meet them. Rents may fall; but farming profits cannot; and, so long as there are consumers for the products of the land, so long will husbandry continue to reimburse those who embark in it with adequate means and knowledge.

Agriculture possesses, too, the advantage of presenting a wider range than most trades, for the exertion of skill and industry; and if it does not so often lead to wealth, it affords a surer competence, and is less subject to total failure. It is very important that these encouragements to the application of capital to the soil should be generally understood; for the national prosperity is involved in its success as the main-spring of all industry, and in that every man in the kingdom, from the wealthiest peer to the poorest laborer, is interested. The term "National Prosperity" is very commonly applied merely to the resources of government, and although these are derived from the common stock, it is yet difficult to convince a poor man, that he, who apparently shares none of the national wealth, can be at all concerned in its amount. But although money may be accumulated in a few hands, and there remain inactive, and useless to the community, yet the fruits of the earth cannot be so hoarded; when once produced they must be distributed among the people, for no one can consume more than a certain quantity; and in proportion to the amount, each individual gets more or less, as his share. Each may not be able to procure as much as he wants; but he certainly would obtain still less, if less were produced in proportion to the population. Every increase of product, however slight, and although only apparently beneficial to those who directly profit by it, is therefore eventually advantageous to the whole nation; and not only is more food thus obtained, but work, by which it may be purchased, is also provided in the growth and manufacture of raw material. The whole wealth of the world has been acquired by labor. In the early stages of society, it was solely employed to procure food and shelter; but when the course of civilization taught a more economical and effectual application of its power, it was found that a few individuals could supply the wants of many. Hence the superfluous number became manufacturers; and, as the arts advanced, and machinery was invented, those conveniences were gradually introduced which have now become indispensable to our comforts. The list of these has grown with the progress of knowledge and refinement, and many things, which in the infancy of society were deemed luxuries, are now included among our most common necessaries. Thus, in every country, the condition of the people is seen to depend upon the degree of skilful labor which it can command: but the plough is the prime mover of all, for until a sufficiency of food be produced for the common consumption, no one can be spared from the cultivation of the land; and it is obvious, that in proportion to the perfection of that cultivation will be the amount of subsistence obtained, and the number of spare hands left for other purposes. The means of support in other branches of industry being thus secured, the demand for the produce of the land increases along with the produce of that labor; more hands are then required for its cultivation, and these again require more manufactures. Thus industry and wealth keep pace with agriculture, and, each stimulating the other, contribute to the national prosperity. That such is the effect of agriculture on the welfare of the community, is proved by the history of its progressive improvement, and of the consequent change in the mode of living in this country; of which a brief sketch may not, perhaps, be either irrelevant to our subject, or wholly unacceptible to the general reader.

* Library of Useful Knowledge, Farmers' Series, No. 7; Report of a Farm in North Hants, by Henry Gawer, Esq., p. 5.

MANGOLD WURZEL.*

Report of the committee of the Doncaster Agricultural Association on the advantages of mangold wurzel, as a fallow crop. Founded on returns received in answer to the queries issued by the committee of London, 1830. Pamph. 8vo, pp. 7.

"The advantages of mangold wurzel are these: It is more sure to plant, being very little liable to the fly or grub; it will produce more weight; it is off the land earlier; it is useful as a change of fallow crop, when the land is tired of turnips; it will grow on land where turnips cannot be raised; it is better spring food. On the other hand, in favor of Swedish turnips, it may be said, that the weeding and singling out are less expensive; there is rather more time for fallowing in the spring; the succeeding crop is better than after mangold wurzel. Perhaps cattle feed best on Swedish turnips when they are used alone. It must however, be

* Erroneously spelled Mangel Wurtzel.

remarked, that these last two evidences in favor of Swedish turnips are not fully proved, and only partially supported. In conclusion, perhaps two observations may be of use. First, that the very early season at which mangold wurzel should be sown, renders it highly expedient that the land be made as clean as possible in the autumn, so that a few days in the spring may be sufficient to get it into a proper state for the reception of the seed. Secondly, that wet seasons do not suit mangold wurzel so well as dry; and, consequently, for the last two years, the Swedish turnips have been the more valuable crop of the two.

PLANTING OF HARDY EVERGREENS.

From the Quarterly Journal of Agriculture.

By Mr Macnab, Superintendent of the Royal Botanic Garden of Edinburgh. Mr. Macnab says that he has planted evergreens at all seasons of the year, with more or less success, though from the middle of June to the middle of August, is the most unfavorable time for planting them. The particular seasons which he recommends, are late in autumn, or during winter, or very early in spring; that is, from the middle of October till the middle of February. And of this period, he recommends, as the best, from the middle of October till the middle of December, provided the weather and the ground be favorable; that is, provided there is no frost, no drying wind, nor much sunshine, and the ground is not too much saturated with wet, either from continued rain, or from the nature of the soil. Mr. Macnab also differs from others in the treatment of the plant, when putting it in the ground. Some recommend, when the plants have been long out of the ground, to be particular in drying their roots, by exposing them as much as possible to the sun and air, and not to be nice in planting. But the following are Mr. Macnab's views on this subject:—"One of the principal things to be attended to in planting evergreens," says he, "is to fix on a dull day for winter planting, and a moist day for spring and autumn planting. There can be no secret in the proper treatment of evergreens. If there were, I should say, that it is in preventing their roots from becoming dry, when out of the earth; to choose moist and cloudy weather for planting; and still better, if we had the power, by foresight or otherwise, to secure a continuance of such weather sometime after they have been planted. If the roots of evergreens be allowed to dry when out of the ground in spring, it is scarcely possible to prevent their suffering considerably, and showing this injury a long period after they are planted." And hence he recommends the winter months as being those in which we are best able to attain these purposes, the day being in general moist and cloudy, and even when it is sunshine, the sun being such a short time above the horizon, and its influence so trifling as to have little effect. But where that kind of weather cannot be obtained, he then recommends the work to be performed in the evening, after the sun gets low, particularly in spring or autumn planting. The following are his directions for the details of planting:—

"In planting evergreens," says he, "whether in a dull day, a wet day, or a dry day, it is very necessary to keep in view the expediency of keeping the plants for as short a time out of the ground as possible; if only a few minutes, so much the better; and, in all cases where it can be done, where great numbers are to be planted, we should, if possible, have some men stationed to take up the plants, others to carry them, and a third set to put them into the ground. In all seasons, situations and soils, the plants should be well soaked with water, as soon as the earth is put about the roots." Though he recommends universally the practice of watering immediately after planting, he remarks that the urgency of the case is less where the evergreens are planted in winter, to form underwood in extensive plantations; and that the deaths, without watering, will be so few, that they are not worth avoiding, where it costs much expense and trouble. "As soon as the plant has been put into its place," continues Mr. Macnab, "the earth should be filled in, leaving a sufficient hollow round the stem, and as far out as the the roots extend, to hold water, which should then be poured in, in sufficient quantity to soak the ground down to the lowest part of the roots. In short, the whole should be made like a kind of puddle. By this practice, which is particularly necessary in spring and autumn planting, the earth is carried down by the water, and every crevice among the roots is filled. Care must always be taken to have as much earth above the roots of the plants as will prevent them from being exposed when the water has subsided." An old birch-broom, or any thing similar, he observes, ought to be laid above the roots, to break the fall of the water when it is poured upon them, and to prevent the roots from being washed bare of such earths as may adhere to them. This thorough watering is so indispensable, that it is to be applied even although it should be raining at the time of planting. After the water has been absorbed, the earth should be levelled round the stem of the plant, and as far out as the water has been put on, but not trodden. If the plants are large, a second watering is sometimes necessary; but, in ordinary-sized plants, one watering is quite sufficient; and, after remaining twenty-four hours, more or less, according to the nature of the soil, the earth about the stem, and over the roots, should be trodden as firm as possible, and, after treading, should be dressed with a rake.

CLAYING OR WHITENING SUGAR.

From the Cultivator.

To promote the molasses passing more freely from the sugar, when draining in the moulds or tubs, and to improve its color, in two or three days after the moulds or tubs are unstopped at the bottom, mix white clay with water so as to reduce it to a thin mortar; with this cover the top of sugar one inch and a half thick: when the covering appears dry, remove it, and supply the place with a fresh covering about two inches thick. This process may reduce the sugar one fifth, but will add correspondingly to the molasses.

PLASTER.

From the Cultivator.

It is a practice with some farmers, and we venture to recommend it to all, to sow plaster of Paris on their grass grounds *in March.*

Diary of the temperature and state of the Weather in April, observed at Shellbanks, Prince George County—37° 14′ N. Lat.

Fair, or sunshine, f—*cloudy,* c—*rain,* r.

APRIL.	Thermometer at Sunrise.	Weather.	2 o'clock, P. M.	Weather.	Twilight.	Weather.	Change of weather during the night.
1st	46°	r	70°	c	70°	f	
2d	64	c			58	r	
3d	50	c			51	c	
4th	42	c	44	c	43	c	
5th	40	f	41	c	43	c	
6th	40	r	43	r	51	r	
7th	51	c			60	f	
8th	50	c	63	f	60	c	
9th	49	c	66	c		r	
10th	53	c	50	c	51	r	
11th	46	c	53	c	54	c	
12th	44	f	53	f	57	c	
13th	54	r	64	c	58	c	
14th	53	c	71	f	65	f	
15th		f	70	c	60	c	
16th	57	c			68		
17th	51	c	82	c	74	f	
18th			56	c	51	c	
19th	46	c		f	60	f	
20th	54	c	74	f	69	f	
21st	58	c	83	f	77	f	
22d		f	85	f	79	c	
23d	70	c		f	60	f	
24th		f		f	59	f	
25th	54	c		c	50	c	
26th	34	f	60	c	56	c	
27th	35	f	56	f			
28th	36	f	69	f	61	f	
29th	49	c		c	54	c	
30th	39	f	66	f	54	f	

POSTS.

From the Maine Farmer.

There have been some remarks published in the Genesee Farmer upon the subject of setting posts butt end up, in order to insure more durability. We were last summer informed by Mr. North of Augusta, that he set, several years ago, two posts near the river at the landing in Augusta not far from the Kennebec Hotel. One of the posts was set butt end up, the other was set the butt end down. He states that both were equally sound when placed in the ground, but that the one which was set butt end up is now sound and good, and that the other is decayed.

His mode for accounting for the difference in preservation is the following, viz: that the tubes in the wood through which the sap ascends while growing, are furnished with valves or separations to prevent the weight of the sap from passing back. That if the post be set in the ground with the small end up, the moisture would rise in the same manner that the sap did, and thus hasten a decomposition of the wood, but if set in the other position the valves or partitions would prevent the moisture from rising at all. This theory is plausible, but whether true or not we cannot say, or whether setting a post with the small end downwards will cause it to last longer than otherwise, we cannot say from any experience that we have yet had ourselves. One method, however, is certain, viz: charring as mentioned by Carolus. And we have also found that by heating the whole of the post even if it be not charred it will increase its durability.

There seems to be a sort of low state of vegetable life remaining in wood even after it has been cut for some length of time; and the action of this vitality does seem, in a manner inexplicable to us, to produce decay. The shipwrights in the English Navy Yard have become aware of this sort of morbid life, if we may so speak, and they have adopted the plan of soaking their ship timber in a weak solution of corrosive sublimate, in order to destroy this kind of action and preventing what is called the dry rot in timber. We have lately received the February number of the Mechanic's Magazine, in which we find some remarks on the subject of preventing the decay of timber by saturating it with lime. We shall publish it in our next.

SHEEP.

From the Genesee Farmer.

Late in the summer of 1830, I borrowed $100, and went into the neighboring towns and purchased sixty-eight sheep, at the average cost of $1,30 per head, which left me remaining on hand $13 of my borrowed money. At this time I had on hand twelve sheep; which with those I bought, made me a flock of eighty head. The next winter I kept them on good fine hay, without any grain, until the first of March, when as the ground was bare, I quit feeding hay and turned them out upon my old pastures, and commenced feeding a little corn. The winter of 1830-31, it will be recollected, was one of uncommon severity; but notwithstanding its length and coldness, I lost but one sheep, and that by casualty. I continued feeding grain until the first of May, when as the grass had got a considerable growth, I thought it unnecessary, and quit entirely. That season I raised 36 lambs, which increased my flock to 115. In June I sold the wool produced by my old sheep, for $150,06. I went and redeemed my note, and had *left of money I received for wool*, $44. The winter of 1831-32 I fed my sheep as before, but lost three head; consequently, in the spring, had but 112 to shear, which produced 300 pounds; this I sold at the very low price of 35 cents the pound, or $105 for 300 pounds. The same season I raised 45 lambs, and sold 60 head of my old sheep for $78,60; making the amount of sales from my flock that season $181,60. In the winter of 1832-33 I lost 6 sheep—in the spring sheared 91; but in consequence of the great proportion of lambs, the produce of wool was small. I retained a number of fleeces for home use, and sold the remainder, (176 pounds) for 50 cents the pound or $88 for what I had to sell.

Thus it will be seen that my flock, for three years, has averaged 94 head, and that the *actual* sales from it have amounted to $419. The last summer I raised 30 lambs and sold none of my old sheep; consequently in August last, when the three years had expired since my purchase, I had on hand 119 sheep, which is 25 above the average for three years past, and which 25 sheep were worth at that time $2 the head—making $50 for 25. This added to my sales would make $469 for

the produce of 94 sheep for three years, or $156,33 for one—equal to $1,66 per head annually.

I have made the following estimate of the expense of keeping 100 sheep for one year. I may be incorrect, if so I hope some of your correspondents will correct me.

Twenty acres of good land, well turfed, will keep 100 sheep a year viz: five acres of meadow, producing two tons of hay to the acre, will winter, and fifteen acres of good pasture land will summer them. Twenty acres of land at $40 per acre would cost $800; and 100 sheep, at $2 the head, $200; making the cost of land and sheep $1,000.

Interest on $1000 one year, is	$70,00
Cutting and securing 5 acres of grass,	5,00
Thirty bushels of corn, at 4s.	15,00
One barrel of salt, at 16s.	2,00
Washing and shearing 100 sheep,	5,00
	$97,00

If the above estimate be correct, it will be seen that I have realized from my flock a net profit of more than fifty per cent. for three years together.

W. G. B.

Genoa, March 31, 1834.

LEACHED ASHES VALUABLE AS A MANURE.

From the Genesee Farmer.

Many years experience has established the fact, that for dry sandy loams, no other manure is so lastingly beneficial as leached ashes. The farmers residing on the borders of Hempstead plains, Long Island, have ascertained, that barren soil may be made to produce heavy crops of grain and grass by the use of this article; and although the expense to them is heavy,—in many instances not less than $20 per acre,—the increase of crops so richly remunerates them, that they are gradually enclosing the plains. A farmer residing there informed me, that the beneficial effect of the ashes was visible for seven years; and his statement is confirmed by that of a very respectable farmer of Wayne county, whose soil is a sandy loam. He told me, that in passing through his corn last season, he discovered that a part was far inferior to the rest of the field, and was at a loss to account for it, until he recollected that seven years before he ashed that field, except a part, and discovered by a mark he had made on the fence, that this inferior part was that which was left unashed.

From a paper in the 1st vol. of the New York Ag. Soc. Trans., by E. L. Hommedieu, it appears "that ashes are found to succeed best on dry loamy lands, or loam mixed with sand. It is considered as the cheapest manure that can be procured. Ten loads of this manure on poor lands, will produce ordinarily 25 bushels of wheat, which exceeds by $5 the expense of the manure, and the $5 pays for the expense of labor in raising the crop. The land is then left in a state for yielding a crop of hay of between two and two and a half tons per acre, which it will continue to do for a great number of years. No manure continues so long in the ground as ashes."

In many parts of our country where sand predominates, leached ashes may be obtained without any expense but drawing, and in some instances, the owners of pot asheries have assisted to load, for the sake of getting rid of them. Farmers thus situated must be blind to their own interest, if they do not profit by the privilege.

I know by experience that apple trees are greatly benefitted by the application of ashes round them, and I have no doubt but that other fruit trees would be equally benefitted.

It has been ascertained, that *on wet lands ashes are not beneficial*, having a tendency to introduce moss.

Experience has also taught those farmers of Long Island, who have made the greatest use of this article in years past, that when the effect of the ashes has disappeared, a change of manure is more fertilizing than a renewal of ashes.

It is said that grass on light soils is greatly benefitted by a top dressing of ashes, and that the effect will be very visible on the crops which may succeed.

ONTARIO.

ENCOURAGEMENT OF AGRICULTURE, BY THE LEGISLATURE OF VIRGINIA.

To the Editor of the Farmers' Register.

Prince Edward, March 27th, 1834.

The perusal of the remarks of your correspondent "J. M. G." has afforded me much satisfaction, not on account of the encomiums paid to your humble servant, but because they are not deserved. I am glad to see, that one, able to present this important subject in a proper manner, has undertaken it. I am glad that my remarks, hastily put together, have attracted the attention of better writers.

I would respectfully address every reader of the Farmers' Register, and ask him, if this is not a subject deserving his serious regard. Your paper, sir, has, I am happy to see, a wide circulation; it must be taken by many members of our legislature, of influence and intelligence. Will they not give this subject serious attention? He is the best politician, who does most for the real interest of his country. And we now lack most, in the attention paid to agriculture.

The man who first raises his voice in the cause of agriculture in the Virginia Legislature, and who, by *judicious action*, produces beneficial results, will entitle himself to the gratitude of his country. We do not want *restrictive* laws. We want encouragement, given in other ways. We want the attention of the people to be awakened to this subject.

The prosperity of every country depends on a judicious system of agriculture. All history must demonstrate this fact. Napoleon Bonaparte never made a wiser remark, than when he said "finances, founded on a flourishing agriculture, cannot fail." Agriculture is the first cause of production. If then, this is defective, all must be. If the spring is dry, the stream must stop.

Modern times, dear sir, have produced many changes in the sentiments of mankind, on this subject. Opinion now, has thrown a garb of disgrace over this noble calling. Our young men think it a disgrace to attend to a farm, or to work. It was not so in old times. Virgil was a cultivator of the earth. The man who restored the Roman commonwealth, was a daily laborer on his own farm. Some of the greatest men in ancient times, were cultivators of the soil. If the young men in Virginia, would consent to pay more attention to this subject, we should soon see a change in public sentiment.

Could any one, from some eminence, look down

on Virginia, and at one glance see her real situation, his patriotism would excite him to action. What immense tracts are there, which were once rich, but are now poor! The wild deer are encroaching on Eastern Virginia. Thousands of her population are going off to fill up the west. Middle Virginia is much exhausted. Unless something efficient is done, our glory as a state has departed, never to return.

The great obstacle which Virginia now encounters, and ever has encountered, in the prosecution of her public works, is the bad state of her agriculture. It is hard to give life and energy to an exhausted patient. Virginia now, only can boast of the scanty means of restoration. If she does not husband these means, she must sink. "Live or die," is the question; and the enterprise and active diligence of our neighbors, while they are serving themselves, are taking from Virginia.

We cannot expect much to be effected at once, by the Legislature; but if attention is excited, by discussing the subject, much may be done in time.

If there is any subject on which patriotism may dwell, it is this.

Let us all think of Virginia, as an "*estate in common*," left us by our fathers, and forgetting *sectional interests*, and laying aside prejudices, let us set seriously to work, to restore our estate. Let us be in haste about it; for New York and other states, are weighing down the balance.

Agricultural societies, properly organized and conducted, must have the most powerful effects on our agriculture. I have by me, a letter, from the excellent Judge Buel, of Albany, in which he says, that these societies, have effected more for New York, than any other set causes. They first interest the people, and this interest communicates itself to the Legislature; thus acting and reacting on one another. Will every reader of the Farmers' Register, exert his influence, to establish agricultural societies, where they can be established. Let them be so conducted, as to call out interest. Let corresponding committees be appointed, who, through the Farmers' Register, will report progress, and communicate with other societies. If the people can once be aroused, all will go well.

It has occurred to me, that much might be effected, by the publication of agricultural tracts, treating on the various departments of agriculture. By printing a large number, they might be sold very cheap. This is only a hint, which may go for what it is worth.

I do sincerely hope, dear sir, that your correspondent, "J. M. G." will continue his remarks on this subject. He has the advantage of experience and judgment, and can impart confidence. In my contracted sphere, I will continue to labor in the good cause, being well convinced, that to promote good agriculture in Virginia, will be to restore her to her pristine weight in this Union; and that to neglect this subject, would be to "give up the ship."

The Legislature of Virginia, certainly will not continue to neglect this subject, when convinced, that legislatures have done, and are doing much for agriculture in other states; and when they see, that our wretched state of agriculture demands *powerful* and *immediate* exertion. Our Virginia pride should call us into action, and our common interests should lead us to concert, in action. Will the next Legislature do any thing for agriculture, or will they commence the next four years war? Let us see. T. B. M'R.

For the Farmers' Register.

AN IMPROVED BEE HIVE.

The box or hive, to be made of inch plank, say, about two feet three inches by twelve inches wide; the upper part of the box to be partitioned off, allowing just space sufficient to admit a drawer of about ten by twelve inches deep. This drawer is to slide upon the horizontal partition, and to be made to fit the inside of the box exactly. In the bottom of the drawer, a hole is to be made, say about one and a half inch in diameter, and a corresponding one in the partition, so as to allow the bees to pass up from the lower part of the hive, into the drawer. In the outer side of the drawer, a pane of glass is to be fixed, in order to ascertain when the drawer is filled with honey. Over the glass, a sliding shutter is to be placed, to exclude the light: or the upper end of the plank, forming the back side of the box, or hive, may be sawed off, and fastened with a hinge and button, so as to answer in place of the sliding shutter. When the honey is wanted for use, remove the shutter from before the glass, and having ascertained that the drawer is filled, introduce a little smoke into the top of the drawer by means of a tobacco pipe; and when the bees have been driven into the lower part of the hive, separate the drawer and partition, with a case knife, remove the drawer, and having emptied it, return it to its place again, and the bees will commence working in it immediately. By this method the honey will be always pure, without bee-bread, or dead bees, and not a single bee need be destroyed; and moreover, it has been tested by many years trial, and found to answer the intention completely. Z.

P. S.—The drawer should have a top *screwed* on, so as to be more readily opened when the honey is to be taken out; and any space between the drawer and the sides, or top of the hive, should be filled with some kind of cement, so as to prevent insects from making a lodgment within the hive.

[The foregoing description will be sufficiently plain to the reader, without plates. The plan appears to be excellent.]

HOW TO DESTROY MOLES.

From the Southern Planter.

Dr. Bartlett—In the last Planter it is stated that the castor bean will destroy moles. I have tried the red Palma Christi (which some say is the same,) with success, merely by placing a few of the kernels in their paths or ploughed places; also calomel, by making holes in grains of corn, and inserting it in the holes and placing the corn in the ground for them. The calomel will not kill them till there comes a rain, when they will be found on the top of the ground. WM. H. RAIFORD.

WEIGHT OF LIVE AND DEAD CATTLE.

From the New York Farmer.

The proportion of live to dead weight, independent of offal is as eight to five. This rule is found to be so correct, that it would be far more satisfactory if cattle were sold by their live weight.

EXTRACTS OF PRIVATE CORRESPONDENCE.

FARMING IN VIRGINIA AND NEW YORK.

Columbia County, N. Y. March 1, 1834

* * * I agree with you in opinion, that Virginia has as good farmers as any in the world; and I am happy to see, by the number and excellence of the communications in the Register, that the mind, as well as the body, is brought into requisition by them—for they teach as well as they practice. It is extremely fortunate for all, that an opportunity is now afforded, through the pages of the Register, to disseminate opinions and practices so valuable to the agricultural interests of the south—for, in comparison to the benefits which are to result from this free intercourse of intelligence and experience, which is of daily, yes, hourly application, to nine-tenths of your population, your gold mines are but as the droppings of wheat to the full gathering a rich and abundant harvest. The agricultural is your great interest; and if, by improvement, you could double the amount of produce of your farmers generally, of corn, wheat, cotton, and tobacco, how small would be the income of your gold mines, compared to harvests so rich and abundant! But it is very questionable whether farms of the large size, if young, can as profitably be brought into cultivation as smaller ones: and in one respect, we have an evident advantage over you, in not employing intermediate persons, (by the name of overseers,) to direct our operations in husbandry. We assume the motto, "that the head of the master is worth more than both his hands"—and that there is much truth in the saying of Dr. Franklin, "if you want to have your business done, *go*—if not, *send*." The multiplied operations on a farm—particularly a large one—want constant and watchful supervision; and there is no one that can so profitably conduct its diversified operations, as the one that is immediately interested in its results. Again, how far it is an advantage to do the work on a farm by free labor, is another subject for consideration, and to the discussion of which, I do not feel myself competent. It has its advantages; and unquestionably, its disadvantages: but with us, it is a conceded point, that a white man will do more work in a day than a black one.

QUERY.

Lenoir County, N. C. March 24.

I am afraid the scarceness of lime deposites in this part of the county will be the greatest obstacle to its being extensively used. I know of but one rich deposite in this county, and that has already enhanced the value of the land 50 per cent. I wish some of your numerous correspondents would give a statement, derived from experiment, of the value of marsh mud as a manure. For if that be valuable (and I have no doubt that it is,) we have the most ample resource.

QUERY.

Northampton County, N. C. March 29.

I should like to see a more detailed account of the horse power and machinery advertised by Parker & Smith, by some practical mechanic, or other experienced person—especially as to its applicability to a horse mill—its probable durability and cost, &c.

LABORS AND RETURNS OF LARGE FARMING.

I have executed two improvements at ***** *****, since I became the proprietor, (which is only two or three years,) that I take some pride in, because they required energy and great labor to accomplish. The first is a farm house, well framed and underpinned, in the shape of an L, protected or close on the north and east, open to the south and west, nearly two hundred feet in length, twenty feet in width, and about the same in height, (exclusive of the roof, which is covered with the best Juniper shingles,) divided into two stories, by large beams, about ten feet apart; the weather-boarding, which is of pine, was tarred on the inside, and lap, before it was put up, and on the outside afterwards; which, if repeated once in a few years, makes a very durable covering. A thrashing machine is fixed at the east end. This house is used in summer to protect the small grain as soon as it can be carted in; and as it is thrashed, the straw is returned to the second story and roof, by placing rails from one beam to another—and from about half way the beams, the rails go to the floor on the back of the house, so that the cattle (oxen and milch cows,) that occupy the first story, can feed themselves, the rails answering the purpose of a rack. There is a farm yard attached to this house, with running water passing through, to which the stock have free access, and therefore can never be neglected in that respect. In addition to having the small grain entirely protected from the weather, and shelter afforded the stock, an immense quantity of manure is made.

The second improvement mentioned, I have been enabled to accomplish, in a great measure, by the first. The improved condition of my oxen has enabled me to enclose the whole estate, (I suppose six or seven miles in extent, being about two thousand acres, and bounded by public roads, except a hundred or two yards,) with very large chesnut rails, which have been carted five or six miles: they are so large indeed, (and chesnut rails are not valuable unless they are,) that good ox wagons and team could only carry twenty five to thirty of them at a load. It is impossible to form a correct estimate of the labor of this undertaking. If enclosures could be dispensed with, by a different arrangement as to stock, how many acres could have been improved, by the application to that object of the same labor. I shall never have occasion, however, to repeat it, unless the fence is consumed by fire. I have preferred, for this outer enclosure, the old fashioned crooked (or worm) fence. We make better straight cap-fences (as they are called) in this county, than I have ever seen elsewhere; but they suit better for division fences—and unless neatly and properly made, which is a slow operation, they are not desirable: whereas, the crooked fence can be taken down and put to rights, by common hands, very rapidly.

The profits of agriculture are generally considered very small in Virginia. I do not think so. The ***** ***** estate, which was a very large investment, has netted me more than eight per cent. per annum; and I have given no credit for supplies furnished, considering them an offset against my personal services: in addition to which, there is a considerable per centage in the increased value of laborers, stock, &c. If a proper representation was made, much of our land would,

I think, be settled by capitalists. The amount which would buy and stock a snug farm in Virginia, capable of yielding a good support to an industrious and economical owner, would, if invested in stock of any kind, scarcely yield enough dividend to pay house rent, servant hire, &c. and the principal itself be in constant danger, particularly at the present time.

We have been alarmingly injured for some years in Gloucester, by the caterpillar; is there no way of getting rid of them? I have been better reconciled to the distressing rains we have had lately, with the hope that the fly, egg, or whatever produces them, may be destroyed.

TOBACCO CULTURE—THE CULTIVATION OF THE CROP.

No. II.

[*Continued from page* 579.]

To the Editor of the Farmers' Register.

Having given my views, in a previous number, on the preparation necessary for the tobacco crop, I come now to the second branch of the subject, proposed to be treated of, in the series laid down in my first essay, to wit: the cultivation of the crop. As this part of the business is much the most simple, and consequently, more generally understood and correctly practised by the mass of planters, I deem it unnecessary to treat it much in detail—and shall therefore content myself with a concise view of the most prominent points.

The first working of the plants should be commenced as soon as they have taken root sufficiently to bear close cultivation with the hoe, which should be applied closely, but lightly, about them, so as to loosen the earth, and remove all the grass from the young plants, which will give them a good start to grow. It is generally unnecessary to plough the land the first working, as the earth is usually loose, from the recent preparation for planting. Should it, however, be hard, or baked, the surface should then be thoroughly stirred with the hoes and ploughs. The harrow, with fine teeth, is usually the most approved instrument in such cases, as it is only necessary to stir the surface in the first working. This operation is commonly called "weeding out," or "trimming down."

About this period the planter should guard strictly against the ravages of the cut-worms, which usually harass the young plants very much about the time they are taking root; and if not destroyed, will cause a great deal of trouble in getting the crop to stand; and at last, will prove the means of making the crop very uneven, and irregular in ripening. This worm, about an inch in length, and of dark color, burrows around the roots of the plants, and if not speedily destroyed by the vigilant planter, will cut off an immense number of plants just below the surface of the earth, and cause the roots to perish. They can only be effectually caught early in the morning, or a cloudy day, as they retreat into the ground beyond the influence of the sun, as the heat of the day comes on. This worm can be best extracted with a small stick, or with the finger, according as the ground is hard or soft. These worms are always most numerous and destructive in old lands that have much litter or coarse manure in them—more especially after a clover fallow. They consequently rarely appear in lands recently cleared. The second working should be commenced as soon as the land gets foul or hard, without regard to the size of the plants. This should be a deep and thorough working, as the roots have not yet extended in the way of the plough; and it is now time to prepare the land for their spreading with facility. Plough deep, therefore, between the rows, with the coulter, and follow it with the hoe, adding earth to the plants according to their size.

By this time, if the season has been favorable, the plants will have attained sufficient size to commence topping, which is generally the case in about six weeks after planting. This operation should not be commenced too early, as I am satisfied, from long observation, that the size of the plant is very much diminished by premature topping. As a general rule, until the last of August, the plant should be at least eighteen inches high, before it is topped. After that time, it may be topped lower, according to the advance of the season.

I am fully satisfied, (after a *fair* trial of every mode practised in this country, of priming and topping,) the plant comes to greater perfection in our climate and soil, primed six inches, and topped to eight leaves. Many planters do not prime at all, believing that they can make more tobacco in weight, and of as good quality, by simply topping to twelve leaves, four leaves usually being taken off in priming. They contend (and I confess with some plausibility,) that the lower leaves serve to shade the hill, and keep it moist, and consequently promote the growth of the plant; and, that taking these off in priming, bleeds the plant, and retards its growth.

I am satisfied, however, that these results are not realized in the quality and weight of the plant, when it comes to perfection. For it is clearly ascertained, and almost universally admitted, that the plant, primed and topped to eight leaves, comes to greater perfection in weight and quality, than with any other number. If this be true, then it follows as a consequence, that the non-priming system only increases the number of leaves, without any addition of quality or weight. And I think it will accord with the experience of every planter who has tried the non-priming plan, that the additional number of leaves proves a great nuisance to him, in every stage, of the preparation of the crop for market, after it has been cut. For, in the first place, the greater the number of leaves on a plant the harder it is to cure, and still more difficult to cure uniformly. And in the second place, these extra leaves growing very near the ground, spread an immense deal of dirt through the whole crop, when it comes to be "bulked down" for stripping, from which it would otherwise be comparatively free. But I have dwelt longer on this head than I intended; though not longer, I trust, than its importance deserves.

The third working should also be deep, as it is the last time the land can be judiciously ploughed, for fear of breaking the roots, which is evidently a great disadvantage, especially if the weather be at all dry. This ploughing should be done with the shovel plough, or small Dagon, and followed with the hoe enlarging the hills. About this time the tobacco is usually visited with a green worm, called the "horn-worm," which feeds on the tender leaves, and sometimes will almost destroy a plant in a few days, if the worm is not destroyed.

The planter should be on the watch, and have them caught while young and comparatively innocent. He should be careful to have the eggs destroyed also, as they will soon hatch and keep up a succession of worms These may be found on the underside of the leaves near the fibres or stems. They are round and transparent, and about the size of a partridge shot. They are deposited on the leaves by a species of fly, commonly supposed to be the large fly, seen in a summer's evening about the blossoms of the James Town weed. But of this I am doubtful. About this period also, the plants begin to put forth suckers, which, together with the worms, should be carefully kept off, by going over the crop at least once in ten days; as a little neglect at this time is attended with serious injury to the crop.

The fourth working should be slight—merely scraping over the surface with the hoes, so as not to interfere with the roots. Four workings are generally considered sufficient, but I generally give my crops five—the fifth being similar to the fourth—especially on my old land, as that requires more frequent stirring than new. In about six weeks from the time the plants are topped, they will be ripe, or ready for the knife—which brings me to the third branch of the subject, that of cutting and curing. These will be treated of in a third essay, hereafter. G.

Wardsfork, Charlotte County.

THE TURKEY BUZZARD.

From the Baltimore American.

A small pamphlet has been put into our hands by a friend, containing an account of some interesting experiments made at Charleston, South Carolina, during the winter, for the purpose of determining certain facts in the natural history of the Vulture. The Turkey Buzzard and the Carrion Crow were the particular subjects of experiment, and the object was to determine whether they do in fact possess the extraordinary powers of smelling, which have been so uniformly attributed to them by naturalists, and whether it is their habit to feed only on putrid meat.

Mr. Audubon was the first writer on American Ornithology, who denied the Vulture the faculty of smell, and maintained that it is guided by the eye only, in its search for food The experiments by which he arrived at this opinion, were published in 1826, and have been treated on both sides of the Atlantic, with severity, as unsatisfactory, and indeed palpably absurd. The pamphlet before us, written by Doctor Bachman of Charleston, details a series of experiments, made for the express purpose of testing the correctness of Mr. Audubon's opinion. That gentleman was on a visit to Charleston, but took no part in them. They were witnessed by Robert Henry, President of the College of South Carolina; Dr. John Wagner, Professor of Surgery of the Medical College of the State; Dr. Henry Frost, Professor of the Materia Medica; and C. F. Leitner, Lecturer on Botany and Natural History, in the same institution; Dr. B. B. Strobel, and Martin Strobel, Esq.—all gentlemen of eminent standing and capacity. They have unanimously signed a certificate, stating that from the experiments they have witnessed on the habits of the Vultures of Carolina, called the Turkey Buzzard and the Carrion Crow, they "feel assured they devour fresh as well as putrid food of any kind, and that they are guided to their food altogether through the sense of sight and not that of smell."

The result, besides its bearing on a material part of natural history, is a gratifying testimony to the scientific accuracy of Mr. Audubon, and a sufficient defence against the illiberal sneers with which his discovery has been treated. The experiments detailed, show not only that these birds are without any particular strength of smell, but that they are destitute of the sense altogether. Among other proofs of this, it was found that they were attracted by coarse pictures of dead animals, and were unable to perceive flesh, which was only hidden by a piece of canvass, although standing upon it at the time. The experiments were varied in such a way as to make it impossible there should be any mistake. There can be no doubt, that with respect to this part of the Vulture family, the opinions that have prevailed for so many centuries are erroneous.

Among the experiments was one to test the story, published lately,—that if the eye of the Turkey Buzzard was put out by perforation, it would be restored, and the sight renewed, by putting the head under the wing, the down of which was said to perform the miracle. They found that the ball of the eye is refilled, but the sight was not restored. They found, also, that a blind bird cannot perceive the most offensive animal substance, however near.

BIRD KILLING.

From the Farmer and Mechanic.

The following notice to gunners and hunters, signed by nineteen individuals, appeared in a late number of the Germantown Telegraph.

"We, the subscribers, of Lower Merion township, Montgomery county, viewing with concern the astonishing increase of insects, and the immense damage done to our crops and fruit, for several years past, and believing the cause to be principally owing to the killing of birds, do most respectfully admonish all persons to abstain from shooting them, or destroying their nests or eggs; and, for ourselves, we do absolutely forbid any person or persons trespassing on our places, breaking our fences, hunting or firing a gun on our respective lands, or with dogs of any species: therefore, any persons entering on our premises, contrary to this notice, must expect to be dealt with according to law."

TO PREVENT MILK BECOMING SOUR.

From the Mechanic's Magazine.

To prevent milk from turning sour and curdling, as it is so apt to do in the heat of summer, the milk-men of Paris add a small quantity of sub-carbonate of potash or soda, which saturating the acetic acid as it forms, prevents the coagulation or separation of curd; and some of them practise this with so much success, as to gain the reputation of selling milk that never turns. Often when coagulation has taken place, they restore the fluidity by a greater or less addition of one or the other of the fixed alkalies. The acetate which is thus formed has no injurious effects, and besides milk, contains naturally a small quantity of acetate of potash, but not an atom of free or carbonated alkali.

To the Editor of the Farmers' Register.

PREJUDICES AGAINST MARL, AND THE GREAT LOVE OF FENCES ENTERTAINED BY FARMERS OF VIRGINIA.

Sir:

Necessity is the mother of invention, and nothing but stern necessity will make men, or at least us Virginians, move on in any other way than that in which their forefathers have trod. Would you believe it, sir, that three out of four farmers will laugh you in the face while you may be lecturing upon the subject of marl, and many an honest and good man, will reply to any praise that you may bestow on calcareous manures, that our forefathers got along very well, and they see no reason why we should not be able to do the same; that there can be no virtue in any such thing as that. Some have said, that if there was any virtue in what is called marl, they would make their lands rich at once; hence they began, and soon over-dosed the land, and have since declared a perpetual war against all marls, lime, and all calcareous earth. Others naturally disposed to be prejudiced against all innovations upon old habits, readily seize hold of the very unfair trial of those who have not used this manure properly, and condemn the whole theory, and call you wild and visionary; and though the lands on * * * * * * river abounds in marl and calcareous manures, yielding from 50 to 80 per cent. (of lime)—nay, millions of it, can be obtained, not three feet below the surface of the earth, and much of it upon the top of the earth, yet such are the prejudices of the good people, that few, very few, will use it.

Upon the subject of the benefits of marl, I want to give you before long, my humble views, and particularly in relation to clover. I discover, wherever I have used the marl or lime freely, that clover succeeds very well: and if I can possibly make out to divide my little farm in the way I finally contemplate, I should like for you to pay me a visit, if in the reach of possibility, that I might be enabled to have a full and free chat with you, and that you might yourself see the disadvantages that I have labored under, and what really should be thought of the benefit resulting from the use of calcareous manures. If I had such, (and on such land) as are lying in millions of loads on * * * * * * * river, then, and then alone, would I have a fair opportunity to use it.

But, sir, the greatest inconvenience that I labor under is fencing—the public road running through my little farm, and as it is him alone that the fire burns, or the shoe pinches, that will first cry out, so it is your humble servant that now takes up his pen to protest against the present plan of Virginia fences. I have long labored in the cause of fence-reform—but as yet to no purpose. Still, however, I do not despair, but that the legislature will, if application be properly made to them, suffer their minds to get quiet long enough from President-making, to attend to the wants of the farmers, the bone and sinew of the country, and the support of all. We grumble and growl about taxes, and really, sir, of all taxes that the Virginia farmer pays, that of his fences is the dearest. Yes, tenfold dearer than all. I assert it without the fear of contradiction, that a million of dollars a year will not pay the expenses of the Virginia farmers in fencing, laying aside the timber which is wasted. I hold it to be clear, that he who is prodigal and wasteful, commits a sin in the eye of his Maker; and really, sir, it would make the heart of any reflecting man ache to see the immense waste of valuable timbers in very many ways, in getting staves and lumber, and even in getting a few logs. All this the people of Virginia will, in time, want. Reason with them, and they answer you, that they never shall want in their day, and that all those to come, must provide for themselves. However, so it is, they go on cutting and slaying, and wearing out their lands, clearing more, and the last step they take is to remove to the far west, leaving the land of their nativity, and the bones of their fathers and mothers, to seek a new home: when Virginia, and particularly Eastern Virginia, might be made to sustain a much larger population than she at this time does maintain, and instead of (in the language of the author of the *General Description of Virginia*, being a sand barren, and the pine tops waving over the fields, and the worn out and exhausted fields continually presenting themselves to the travellers' view; a large proportion of the lands might be made profitable to the cultivator, and as pleasing to the eye, as they now are otherwise. Nature has done much for us, while we have done nothing for ourselves. But to the point: remove the cause, and you remove the disease. I would at once, put the axe to the tree and destroy the whole of the defective plant. But that is impossible; and, therefore, it is a subject that I will not now touch. But by uniting, and pressing our wants,—nay, our claims and demands, we may do much good. I, therefore, respectfully propose, that a petition be gotten up to the Virginia Legislature, praying them to pass some such law as Pennsylvania and New Jersey have, in relation to fences. That being done, the Virginia farmer will begin to see the sun rise in splendor upon his labors; for then he can work with some cheerfulness. It can be demonstrated to the plainest understanding, that the fences of Virginia are the heaviest taxes in the state; and next to them the road laws. If the members of the legislature will not regard our just complaints, and our final representations of the wants of agriculture, and the true interest of the country, then let us call a convention of farmers, to meet in Petersburg or Richmond, upon the fence system particularly. And I really believe, that we can send our complaints home to the legislature, so that they will be compelled, however degrading they may think agriculture, to attend to the real wants of the farmers; and if nothing shall be done the next winter for our benefit, in the spring of 1835 let us unite, and swear not to vote for any man who will not rest long enough from party politics to pay some little attention to the rights of agriculture and the soil of Virginia. Yes, sir, let us circulate throughout the country our petitions; flood the land with them, and we shall finally succeed. What! expend more than a million of dollars every year in fences to keep off a parcel of poor hogs and cattle that are not worth any thing at all! I speak now, sir, as to my own situation. I have just put up fences that have cost me three hundred dollars—finished last Thursday night—and to-day they are all down, laid prostrate by the winds, and all the live stock in the neighborhood (horses excepted,) are not worth

half the amount. Now, would it not be cheaper for any man to keep up his stock, his hogs at least? Without doubt: and particularly the poor man, if the rich man's stock was kept from running at large. I could go, sir, into a detailed calculation, and show beyond all question, that it would be the best way. Suppose, sir, a petition was to come, for the sake of uniformity, through the Farmers' Register, to the Virginia Assembly, upon the subject? I promise you to circulate it in my county. The people who think that they have wood in plenty, might object; but Middle Virginia, I know must, and would willingly join in the demand. But this is the place to make the beginning. If we wish to break the force of prejudices and old habits, let us begin where there will be most opposition, and as we go on, we shall gather strength ten-fold. I do not, sir, despair, for I am proud to tell you that we have some zealous men in the cause of farming, and though they may be ridiculed, they still persevere; and some of them, sir, have authorised me to invite you to examine, in person, our lands, marls, &c. &c., and to stimulate them still more in the good cause. To show you that I have long been opposed to our fence policy, I send you some pieces which I cut out of the Whig as far back as the winter 1830–'31, in which this subject is discussed.

Will you be so good as to publish, if you can obtain them, the laws relating to fences in Pennsylvania and New Jersey? Will you also publish, from your own recollection, or obtain from the New Jersey farmer, now on James river, (referred to in your 10th No.) a particular description of his hog sties, and manner of keeping hogs, from the pigging to the killing, and at what age he generally kills his hogs, and the weight of them?

ANTI-FENCE.

7th April, 1834.

From the Richmond Whig, of 1831.

To Messrs Rives of Campbell, Morris of Hanover, and Miller of Powhatan.

Gentlemen:—I observe in the proceedings of the Legislature, that a resolution has been adopted, "instructing the Committee of Agriculture, to enquire whether any, and if any, what measures are necessary, to promote the agricultural interests of this commonwealth; and the committee have leave to report by bill or otherwise."

Permit me, gentlemen, to implore you to use your best influence, and all your talents, to procure the insertion of a clause in the contemplated bill, to compel every owner of stock, to confine his horses, cows, hogs, and sheep, upon his own lands, either by small or large enclosures,as may suit his inclinations:—but let the penalty for failing to do so, be either a forfeiture of the stock, or the value thereof—at any rates,after the second offence. This will "promote the cause of agriculture," and the improvement of our lands, more than any other thing the Legislature can devise, if they were to continue in session six years, instead of six months. I pray you to reflect upon the subject—bring to your recollections, the circumstances which have, within the last twenty years, produced contentions and hatred, quarreling and fighting, in your neighborhoods, and you will find, I verily believe, that the depredations of stock, lie at the foundation of five-sixths of those disagreements. What is so well calculated to make a man hate his neighbor, as to lie in his bed at night and reflect that his neighbor's stock may at that moment be destroying the crop for which he has been toiling nine months of the year?—and how often do we rise of a morning and find our fears of such destruction realized by the fact? I need not tell *you*, gentlemen, that such a law would be beneficial to the poor—you must know it, if you have ever given one hour's attention to the subject—and if you never have, I pray you now to do it. I verily believe such a law would reduce the poor rates to almost nothing in less than ten years—and that there would not be a man or woman in the state, who would not, in the end, applaud your efforts upon this *all important matter*—for, rest assured, without such a law, extending its provisions from the Blue Ridge of mountains to the eastern boundary of the state, or at least to the head of tide water, middle Virginia will become a poor despised country—all your rail roads, sluce navigation, and canal schemes to the contrary notwithstanding. Such a law is worth them all. It is the enclosing system (so much insisted on by all modern writers on agriculture) upon the largest scale; and what is still more desirable, its benefits will be general; and we shall obtain that benefit by a vast saving of money and labor. Col. Taylor, some twenty years ago, calculated the expense of cutting down timber, mauling it into rails, and putting upon dead fences, as equal, on a very large farm, to one-tenth of all the labor bestowed upon the cultivation of that farm. If it is true in relation to a large farm, it is doubly so upon a small one, as every arithmetician knows it only requires double the number of rails to enclose four acres of land, that it requires to enclose one acre—consequently, the small farmer is at twice as much expense as the farmer who has double the quantity of land—I mean double the expense, in proportion to the quantity of land cultivated and enclosed. PETER STONER.

THE IMPORTANCE OF A PROPER MODE OF HARNESSING WORK HORSES.

Translated for the Farmers' Register, from the *Journal d'Agriculture etc. des Pays-Bas.*

We were struck, on arriving in France, at the difference which exists between two places, in the number of horses employed to draw a plough. But in observing these different methods, it was easy to perceive, that to an ill combined system of harnessing the horses, at least as much as to the faulty form of the ploughs, should be attributed a great loss of force, and, consequently, the necessity of employing a greater number of horses. It is established from the exact observations of M. Cordier, that the quantity of work performed by a single horse in Flanders equals the ordinary labor of six horses in the interior of France. It would then be useful to all persons whose situation obliges them to use these animals, to point out the causes of this enormous difference; causes which M. Cordier has not been able to state, because they are so peculiar as to escape even the best informed persons, who have not made them a particular study, or who have not, by their condition, an habitual acquaintance with them.

In the manner of harnessing horses in France, the traces are in an exactly horizontal direction.

If you except those of the horses hitched to the plough, this is the direction of the traces of all the horses harnessed one after the other, and even of those placed in the shafts of carts. Yet the shoulder of the horse presenting a species of inclined plane to the collar, it follows that the draught operating, in a right line, forces the collar to rise along the shoulder, for the same reason that a double cone rises along an inclined plane. This ascending motion is stopped only by the throat, which sustains the greatest part of the drawing, insomuch, that in great efforts, the breathing of the horse is often endangered. It is one of the causes which most usually tends to render horses thick-winded.

It is useless to demonstrate the disadvantage of making the throat bear what the shoulders ought to support; it is certainly in part to remedy this rising of the collar, and the sort of strangulation which results from it, that those enormous collars have been contrived at Paris and in Normandy, in order that their counterpoise may diminish the injurious rising produced by drawing at an acute angle with the shoulder. But there still remains the ill-calculated point to which the traces are attached, for these in the French collars, are always placed on the very joint on the shoulder, a very great fault, which in the highest degree cramps the motion of the horse and decreases his strength.

The collars have besides the inconvenience (and it is known to many by sad experience) of wounding the shoulders and withers of the horse. This mass of 70 or 80 pounds weight produces heating and continual irritation. In very warm weather, the air not being able to circulate under so compact a covering, the shoulders of the animal are always in a state of perspiration, which easily makes the skin tender, and soon sores are opened, which work only poisons, and which sometimes become incurable.

The Flemish way of harnessing horses obviates all these inconveniences, by causing the draft to bear solely on the shoulders, in which the principal strength of the animal resides. For this reason, with less efficient means, but more judiciously employed, the Flemings execute more work.

Two horses in Flanders easily draw six thousand killogrammes upon a pavement; at Paris, it is true, there are horses which draw nearly as much, but these horses, brought mostly from Flanders, are much superior in size and strength to those used in the Flemish provinces. It is the *elite* of Belgian horses which is at Paris. All the good uncastrated colts which are found, are purchased at eighteen months old, by traders of Normandy, who sell them again in Paris, at four or five years of age. There remain in Flanders only some stallions reserved to propagate the breed, and if a Flemish farmer wished to have a choice team of unmutilated horses, he would be obliged to go to purchase them in France. This country then offers a valuable market to the horse-breeders of Belgium, whence more than ten thousand of these animals are annually taken by France. Valuing these at only five hundred francs each, there are five millions which this country dispenses yearly among the neighboring farmers, for this single object. Can we now be astonished at the *sympathy of the Belgians?*

Those of the Belgian farmers who go to settle in France find advantages in the low price of the lands, in the saving which they make in the well directed employment of the strength of their horses, &c., &c.

Besides the causes mentioned above with respect to the bad plan of draught in France, there are yet others, the most easy of which to be explained, consists in the spring-tree bars. In place of the moveable bars of Flanders, which force the dull horses to draw as much as the quick ones, they always use a fixed bar in France, and thus the spirited horse must draw all that his lazy companion does not pull. This inconvenience, it is expected to remedy by violent whipping, but these lashes only stupify the dull, and force the spirited to do all, by exciting them. Their ardor urges them forward, the double load forces them back; and these shocks kill a much greater number of horses than the true employment of the strength of the team. The whip and blows are as inefficient on horses as rods on children: they brutify the mind and cow the courage in both.

To the Editor of the Farmers' Register.

CANADA THISTLE.

Poplar Grove, near Centreville, Md.
April 7th, 1834.

I observe in your last number an editorial notice of the Canada Thistle, in which you justly express your apprehension that it will, without some legislative efforts to arrest its progress, get into Virginia and traverse the whole country. No plant that I have hitherto become acquainted with, is half so great a pest, nor half so difficult to eradicate. I regret also to say to you, that this vile pest is not two or three hundred miles from Virginia, as you suppose it to be. I have understood, but cannot vouch for the fact, that this thistle has, within a few years, appeared near Norfolk, in your state, where it is known by the name of the *Ram's-horn* thistle, because of its twisting growth, and, perhaps, because also it has been supposed to have been introduced into that neighborhood by importations of merino sheep; and it is very probable the seed may have been brought in the wool of those animals. There is, I am sorry to say, no mistake in the existence of the plant on my farm, and I know not how it could have found its way here, unless brought in the wool of some Saxonys and South Downs, which I obtained from Connecticut, a few years since.

Some six or seven years since, I observed a *single plant* in one of my fields, on Chester river, which was then in blossom. I had the plant grubbed up, as I thought, roots and all, and carefully burned. In the fall, following, I examined the same spot, and found a number of plants springing up in and around the spot occupied by the first plant. I again grubbed and burned. The next season, the field went into corn, and the year after in wheat, on the corn ground. After taking off the wheat, or probably before, while the plants were in bloom, I had them again grubbed, piled, and burned on the spot. They then occupied an area of fifteen feet across. Last year I continued the same process for extirpation, they having then spread over a circumference of twenty-five or thirty feet across. Becoming alarmed at their progress under such efforts for their destruction, I last fall had a small deep ditch cut round the spot

containing the roots of the plants, (which appear to be as prolific as the roots of Mr. Richardson's celebrated fiorin grass,) and then had the spot covered over with salt marsh mud at least twenty inches deep, supposing the *smothering* of the turf and mud, aided by the salt it contained, would do the business; but, to my utter astonishment, early in the winter I found the plants springing up here and there vigorously, through this bed of mud!! I shall add this summer, a few bushels of salt to the bed of mud, and if this, during the hot months, does not do the business, aided by the hoe, I propose then to cover the whole over, first with brush wood, then with a foot thick of oyster shells, and set fire to the whole. If this does not succeed, I must acknowledge myself beaten, unless you can come to my aid. I recollect some years ago to have seen a recommendation by the celebrated General Armstrong, of New York, of *malic acid*, for the destruction of this plant on fields! which he asserts to be effectual, and the only thing he knows of as sufficient. But this remedy, you will say, on a *large scale*, is about as impracticable as laying ploughshares with gold. I may, however, if this should turn out a good apple year, be able to use it, in conjunction with the remedies I have in progress.

Chemically, what will be the result of a combination of *malic acid* with the *muriate of soda?*

T. EMORY.

[We believe (though claiming to have but a very imperfect knowledge of chemical affinities and combinations,) that there could be no chemical change produced, by the malic acid (the acid found in apples) meeting with the muriate of soda, (common salt,) as the soda is held in combination with the muriatic acid, by a stronger power of attraction, than the malic acid has for soda. If, however, any soda, not so combined, was present on the soil, or lime, the malic acid in pomace would so quickly combine with either of them, as to have no effect on vegetation. What might be the properties and effects of the new combination so formed, on plants, is unknown.

We trust that the report of the Canada Thistle being near Norfolk is founded on mistake—as it is certain that the Spanish Thistle (another pest which has been described by R. N. in No. 5) has reached the Eastern Shore of Maryland. The width of the Chesapeake will not be a sufficient barrier to its progress, and it will extend across Virginia, before our legislature will resort to any means to arrest its progress. When no legislative relief has been granted to agriculture, from grievances under which it is actually suffering, it would be still more hopeless to expect any defence from prospective injuries. But, if otherwise, it would be good policy in Virginia, to aid the efforts of New York and Maryland to destroy this villainous plant within their limits, rather than to wait for its appearance in Virginia.]

ON THE USE OF PLASTER.

From the Genesee Farmer.

Mr. L. Tucker—Yours of the 7th of June last, respecting the use of *Plaster*, is now before me; and this being the season in which farmers are bringing home their plaster, an answer ought not to be longer delayed.

You ask of me that I should state, "First—on what kind of soil it is found most beneficial. Secondly—the quantity used per acre, and the time and manner of applying it each year. Third—the course of culture, or series of crops raised on lands to which it is applied for a number of years. And all such facts as it would be necessary for a new beginner to know, to use plaster to advantage."

Plaster has been applied, advantageously, in this part of the country, on a variety of soil. The farm I cultivate has, for many years, at least twenty, received liberal applications of plaster, and embracing as it does a variety of soils, I am enabled to judge of its effects for a series of years. The varieties of soil as indicated by the timber which grew upon them, are oak and hickory—maple, bass, and some beech—another, heavy pine timber, with hemlock—a part was timbered with a young growth of maple, while oak lay decaying on the surface. On all these varieties, we consider plaster very beneficial, and as yet, have not discovered its effects less beneficial. I have never but in one instance used plaster on deep alluvial soil; and then, by experiments made on some rows of corn, while others were omitted, no effect was perceived.

On grass lands, where plaster has been sowed on strips by way of experiment, a person in passing over such grounds in a morning, will find the plastered grass more filled with dew than where no plaster has been put, one of the effects of plaster being to draw moisture from the atmosphere. Low moist grounds, consequently, do not require plaster as much as high dry lands; and at present I consider it very doubtful, whether it will at any time be found of much use on wet land.

The second inquiry is—"The quantity used per acre, and the time and manner of applying it." Much has been said about the quantity proper to be sown at one time. In certain parts of Pennsylvania, where the Nova Scotia plaster is used, only one half of a bushel is put upon an acre at one time. The cost of plaster will, upon examination, be found to regulate to a great extent, the quantity used in every section of the country. In this county, where the best ground plaster can be had at the mills for two dollars and fifty cents per ton, a large quantity is used. The quantity used here by our best farmers, at one application, varies from one to three bushels per acre. Experiments have been made of larger quantities—and it is supposed by intelligent farmers with whom I have conversed, that the greater the quantity the longer will the effects remain. The general practice here is to sow two bushels per acre, and I think in ordinary cases this is enough.

"The proper time to apply plaster" for wheat is in the spring of the year, as soon as the ground has become settled; on oats, as soon as it comes up; corn, at the first hoeing, (a small handfull on each hill;) on pasture, as soon as the grass starts.

The manner of applying it, commonly adopted here is, sling a bag over the shoulder, and sow in lands. The best way to carry the plaster is to have a box of the following dimensions, made to curve a little to the body: two feet six inches long, one foot wide, and six inches deep; attach a strap to the inside corners, pass it over the right shoulder. A place should be cut through the outside of the box, or a handle put on like the handle of a corn basket, that the man can take hold and assist with his left hand in carrying. It has been recommended, in the Farmer, I believe, to sow plaster with

a shovel from a wagon, having it moving about the field. This is a method I have never seen practised, and probably never shall.

"The course of culture, or series of crops raised on lands to which it is applied for a number of years." Plaster is used in connection with clover to a great extent, by our farmers. Clover seed is sown on wheat in March, then plaster. The clover seldom fails, the plaster protects the young plant during the early droughts. The next year early in June, the clover is turned under; there it remains until after harvest: the land is then ploughed and sown to wheat; the next spring clover seed and plaster is sown again. The clover is made vigorous by the plaster, and a large growth being turned under, a permanent manure is thus put upon the land, which manure I hardly think would have been improved by passing through the barn yard. By some farmers it is thought to be good practice to use plaster on the following crops, in the order in which I place them: commencing with grass land, break it up, plant it to corn, the next year sow it to oats, the same fall sow it to wheat, the next spring seed it with clover, pasture a few years, and again subject it to the plough; thus making the land by a comparatively small amount of labor, produce three crops.

The last requisition you make of me, is, that I should "give such facts as it would be necessary for a new beginner to know, to use plaster to advantage."

Having occupied so much space in your paper already, I will only caution the inexperienced against buying plaster that has been kiln dried, (an expedient sometimes resorted to by dealers in the article to make it grind easy,) as it is supposed to be injurious. It should be ground fine; the finer the better. Finally, be cautious in adopting entirely the opinions of other men, but experiment for yourself. Sow some lands and leave others—put plaster on some rows of corn and leave others—in short, be cautious in the beginning, and a few years of observation will enable you ever afterwards to act knowingly.

Feb. 26, 1834. ONONDAGA.

GYPSUM NOT INJURED AS MANURE BY BEING HEATED.

From the Genesee Farmer.

Mr. L. Tucker—In your paper of the 22d March, is an article upon the subject of plaster, signed "Onondaga."

The writer has given some practical observations upon the subject, which I think are judicious; but his concluding caution against the use of kiln-dried plaster has neither foundation in science or experience.

In order to ascertain whether the process of drying plaster produces any effect upon its influence upon vegetation, it will be necessary to examine its nature, and the effect produced by the agency of caloric or heat upon its composition.

Pure plaster (or gypsum) is a compound of sulphuric acid and lime (or oxide of calcium)—and I should consider that the addition of any other substance, would be considered an impurity, and would diminish its salutary influence upon vegetation. It is found in nature in a state of crystalization, and is in combination with water in about three-fourths of the former, and one of the latter. This is denominated the water of crystalization, which is one of the component parts of all crystalized substances. Now what would be the effect of heat upon this compound, or what change would it produce?

If it be exposed to nearly a red heat, it falls down into a soft powder, from parting with its water of crystalization, but is not decomposed. It is still the sulphate of lime, has diminished about one-fourth in heft,* and, consequently, worth about one-fourth per ton more than our common ground plaster for agricultural purposes. If the heat be carried still higher, it is then decomposed and resolved into its elementary principles, and no longer affords any nutrition to vegetables. But this cannot be done without the addition of carbon or charcoal.

Now if these be facts, (and I think they are susceptible of demonstration) how is possible that simply heating plaster sufficient to dry the moisture from the surface, without any change being produced in its composition, can produce an injury, or render it less nutricious?

If there can be any reasonable reply given to the above remarks, I should be glad to see it.

CAMILLUS.

Extract from another part of the Genesee Farmer, on the same subject.

I should have no apprehension that kiln-dried plaster was damaged. I have assisted in heating it to make it grind easier, and have no recollection that its efficacy was impaired. The lime and sulphuric acid, cannot be separated by *heat alone*, although it may be melted. At a low red heat, indeed, it loses its water of crystalization; but it readily recovers it; and I know of no reason for believing that calcination can alter its properties as a manure. A FARMER.

[The foregoing extracts from the Genesee Farmer serve to show the opposite opinions of practical farmers as to the effect of heat on gypsum. The reasoning of "Camillus" is correctly founded on the chemical composition, and known properties, of gypsum. A moderate degree of heat certainly deprives this substance of nothing but the water with which the other ingredients were chemically combined; and it is not easy to conceive, that the mere absence of a portion of water, which is so abundant in the atmosphere and the soil, can lessen the value of the manure. But, on the other hand, it will not be safe to be guided by theoretical reasons alone, when deciding on the operation of a manure, so inexplicable as that of gypsum—the well established great effects of which, indeed, are altogether contrary to what theory and reason would teach, if we had not the louder *facts*, by which to decide on its value. It has been a generally prevailing opinion among practical men, that the effect of gypsum was materially lessened by the stone having been heated: but no accurate experiments have been made, (easy as they would be to make,) to decide the disputed question. It is important that proper experiments should be made for this purpose: for the labor of pulverizing gypsum is greatly lessened by its being first moderately heated—and it is desirable for farmers to use this facility, if it does no

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* Weight.

harm—and to avoid being cheated by its use, when buying ground plaster, if indeed heat is injurious to the manure.]

PROGRESS AND CONDITION OF THE PETERSBURG AND RONOAKE RAIL ROAD.

From the Petersburg Intelligencer.

The stockholders of the Petersburg Rail Road Company, held their annual meeting on Monday last. We publish the following report, submitted to them by the President and Directors.

It will be seen by this document that the actual cost of constructing the road does not materially vary from the sum originally contemplated, which was $400,000; and which it was presumed, would embrace every thing connected with the completion of the road itself, not including land damages, which were, in some instances, liberally waived by those proprietors whose public spirit was excited, but which in other instances, were assessed, we think, without a just estimate or appreciation of the additional value conferred on the land, by the facilities afforded of a conveyance to market. This item of expense was scarcely apprehended in the first instance, as the public spirit and liberality of Virginians was relied on to aid in any way, so novel and useful an enterprise.

But the mere construction of a rail road is not the only source of expenditure. The engines and vehicles for transporting passengers and merchandise, and the buildings to contain the latter, together with an efficient corps of engineers, agents, mechanics, and attendants, must also be provided, and the cost of these have, in the present work, amounted to about fifty per cent. on the cost of the road. So that rather more than $600,000 has been expended by the company, and about $50,000 more will be required.

But all this expenditure is not in vain. There is every prospect of its yielding a remunerating interest, and when the projected road from Richmond to Fredericksburg shall be in operation, the great increase of travelling will warrant all the expenditure on both works.

We call the attention of our citizens to this new enterprise, the success of which, is of the first importance to them, as nothing else can, in so great a degree, contribute to the prosperity of our work, as the success of that. The increased revenue derived from passengers will enable our company to reduce the rates of transportation on produce, and thus secure to our market the trade on which we originally founded our undertaking.

We trust that when the books of subscription to the northern adjunct of our road shall be opened, our citizens will manifest their liberality and foresight, by contributing handsomely to its capital stock. A few links more, and the Atlantic chain of communication will be completed.

Extract from the Report.

To the Stockholders of the Petersburg Rail Road Company.

Gentlemen—This being the day appointed for our annual meeting, the President and Directors have to lay before you a statement of the affairs of the company. The annexed abstract exhibits the whole amount expended on the rail road from its commencement to the present time.

The different items are classed, as you will observe by the statement, so as to show under separate heads, the receipts of the company, (amounting previous to the 1st inst. to $59,448 09,) and the cost of the road, of the locomotive engines, coaches and cars, and of the depots, and other constructions from one end of the line to the other, including the hotel at Blakely, amounting in all to $603,438 22.

You will recollect that twelve months ago, we could progress only as far as Belfield with our one engine, (the Ronoake.) Early in March, we received two other engines, (the Liverpool and Pioneer,) and in the first week in August, the road was so far completed, that the engines could traverse the whole distance to Blakeley.

It will appear from this, that the road was in readiness for use in less than two years and seven months from the period of its commencement, in January, 1831.

About the first of November last, we received two other engines, (the Appomattox and Meherrin,) which were put in operation with little loss of time, and which enabled us to relieve and repair the others, which had been somewhat hardly used, as the transportation on the road had been heavy for the two preceding months. Since November, the business has gradually diminished, until lately, owing in some measure to the inclemency of the season. It has been, however, increased since the beginning of last month, and we have no doubt the receipts of the current year will greatly exceed those of the past.

It will be observed, that whilst the cost of rail road, (exclusive of land damages and purchases of real estate,) does not materially exceed the sum ($400,000) at which it was computed when undertaken, large additional expenditures have been required for warehouses and work-shops at both ends of the road and at the intermediate depots, and for the locomotive engines, coaches and cars, indispensably necessary for the proper accommodation of the trade. Still farther expenditures will be requisite for additional engines, cars and carriages, in the course of the present year, and an additional warehouse and shed, at the Petersburg depot, during the present or ensuing year.

To meet this increased expenditure, leave was obtained from the present Legislature to increase the capital stock of the company to such an extent as might be necessary for the purpose, not exceeding an aggregate of $660,000.

In the present pressure of the money market, it would be impracticable to obtain additional subscriptions of stock, and a permanent loan could not probably be made on terms, which it would be advisable to accept. Under these circumstances, the president and directors would recommend that they be authorized to appropriate the receipts of the road, henceforth, as hitherto, to the use of the company; but that the nett profits of the same, after the payment of all expenses for repairs, for renewal, and for transportation, be semi-annually ascertained by the board, and that certificates of loan, bearing interest, be from time to time issued for the same to the stockholders. The said certificates to be hereafter converted, if any increase of the capital stock should be made, at the option of the holder, into stock.

By the adoption of this expedient, the stockholders will receive in scrip, which will be available to them, the dividends to which they are enti-

tled, and a resort to it, and to such temporary loans as can conveniently be made, may enable the board to meet the exigencies of the company, until either an increase of capital stock, or a permanent loan on favorable terms can be effected.

LARGE WHEAT CROP.

From the Genesee Farmer.

At the annual meeting of the Agricultural Society of this county, (Monroe) in October last, the society's first premium for the best acre of wheat, was awarded to Mr. *Jirah Blackmer*, of Wheatland, the acre producing, according to the certificates presented to the society, *sixty-eight bushels and forty-three pounds.* The conditions on which the premium was granted, not requiring a statement of the manner of its culture, Mr. B. has, at our request, furnished the following:

Mr. L. Tucker—Agreeable to the request which I recently observed in the Genesee Farmer, I give you an account of the culture of an acre of wheat, for which the first premium was awarded by the Monroe County Agricultural Society, in October last. This acre was part of a field containing twenty-two acres, which had lain four years in clover, and been occupied as a pasture. It had never received any barn manure, but had several times been sowed with plaster or gypsum.

The acre which I selected, lay in a basin or hollow, and the surface of the ground gradually descended towards it in every direction; and in a time of heavy rains, or the snow going off in the spring, it was generally flowed with water, which made it very rich. The natural soil is a sandy loam with an excellent sub-soil. I had the stones and other obstructions to the plough, removed, and ditches cut to prevent the water from running into it in a wet time, and flowing it. In the fore part of June, the field was ploughed deep with a good team—in August it was harrowed and cross ploughed quite deep; and the fore part of September it was again harrowed and ploughed very fine. On the 14th of September, it was sowed with a little less than a bushel of seed to the acre, one half white flint and the other red chaff, mixed together. It was harvested the 25th of July, when it was quite green, and the kernel but just out of the milk. It stood the thickest on the ground of any wheat I ever saw, and the straw was large and very tall, yet so firm that it did not lodge—the heads were unusually long and well filled, so that nine sheaves yielded a bushel.

I would remark, that I am satisfied from experience and observation, that plaster is not only highly beneficial to grass lands, but of great service to grain crops, and I almost invariably fail of a grain crop unless I plough deep.

Yours, with respect,

JIRAH BLACKMER.

Wheatland, March 17, 1834.

ON THE ADVANTAGE OF CUTTING FALLEN WHEAT BEFORE IT IS RIPE.

Translated for the Farmers' Register, from the *Journal d'Agriculture etc. des Pays-Bas.*

Although many distinguished writers on agriculture have protested against the practice of cutting wheat before it has reached its complete maturity, we think it, nevertheless, our duty, to insert in our journal the following article extracted from the excellent collection published by the agricultural society of Chalons.

It is generally known that for a seed to have acquired all the qualities which render it proper for reproduction, it is necessary that the plant from which it proceeds, should have undergone the elaboration suitable, and passed through the periods requisite for a perfect fructification. It is perhaps less known, although many writers have enlightened farmers upon this point, that the alimentary qualities in cereal plants are produced before the complete maturity of the grain; and that a premature harvest may, nevertheless, yield a good product, if, after having been cut, the plant is subjected to a well regulated desiccation. We extract then, with pleasure, from the correspondence of the society, a note of M. Procquez, a farmer, and the mayor at Sompuis, (*arrondisement de Vitry*) on the measures which he has taken for several years with respect to his fallen wheat. This note contains practical facts, which the society especially desire in their communications with our agriculturists. The results of the experience of our correspondent, while recalling facts already known, are not the proper ones for publication, particularly in the country adjacent to us, in which the harvest of each year is considerably diminished in its most important product, by the circumstance of the wheat having fallen, in consequence of heavy rains, and without any accident on lands where too great a depth of soil, too lavish an application of manure, or any other cause of this nature, produces too rank a vegetation.

"It will, doubtless, not be indifferent to the agricultural society," says M. Procquez, "how I save my wheat which has fallen, or become entangled, and how chance instructed me in this plan, which has perfectly succeeded. The first year that I became a farmer, I had seen in some periodical works of agriculture, that a mould abundant, and filled with fertilizing principles, might be obtained by spreading layers of earth under the cattle, to take it up afterwards and carry it out to the fields. I determined to make this experiment, which had all the promised success, but being ignorant of the strength of this manure, I applied three times as much of it as was necessary. At first, I was delighted with my success, seeing a noble growth of wheat; but my joy was of short duration. Scarcely were the heads developed, when my wheat had already fallen to a very unusual degree. I examined it often, and perceived that the grain was sufficiently large, but was evidently withering. Judging that it would come to nothing, I resolved to have it cut, green as it was. The reapers regarded me as crazy to cut wheat so unripe. I, nevertheless, continued my operation, adding the precaution of leaving the sheaves for five or six days upon the field before putting them into the barn.

A month after, being in want of litter for my cattle, I had my wheat threshed. What was my surprise when I saw a grain well filled, of a yellow color, and presenting a combination of such qualities that I resolved to take it for seed! Here I acquired a new lesson. This grain yielded excellent flour, which had little bran, and was very white; but it was useless for seed, for it produced me at least two-thirds of smutted wheat, occasioning a considerable loss. But experience must be bought, and this loss has proved to me that to avoid having

the smut in wheat, it is necessary to sow no wheat which is not perfectly ripe. Since that time, I have taken more care than ever to let my seed-wheat ripen, and I have not since had a head attacked by that disease. I have, besides, made this observation, that the years succeeding wet harvests, in which the wheat ripened with difficulty, produce much smut in wheat.

Let us return to fallen wheat. My first trial, which I have since repeated several times, has always succeeded with me, and I am led to believe that, provided the grain has attained its full size, the greener the wheat is cut, the better will be the product. Rye which is too rank may be cut in the same way, and with the same results."

SOAP.

From the Genesee Farmer.

Mr. L. Tucker—It is in vain to urge that Agricultural papers are of no use—the short article on making soap, in the Genesee Farmer, 22d February, folio 57, if rightly understood, is worth at least five years subscription to every family who has soap to make.

Some years ago I was knowing to a circumstance as follows: A man, engaged in the pot ash business, had plenty of soap grease and leys. He set his pot ash boiler to manufacturing soap. He used leys from five to ten days old, and the grease would not mix. He worked above four days, and as often as he let the kettles rest, the grease and ley would separate. This stuff was put into barrels, and some of it sold to a clothier, and came very near spoiling all his cloth, and the rest was mostly wasted. Had the ley been run through fresh lime it would have mixed with the grease instantly, and much expense and risk saved. Ley, on standing a few days, will combine with carbonic acid, and will not mix with grease. Lime will take this acid away, and then there is no difficulty in making soap. RATIO.

THE ROAD LAW.

From the Lexington (Va.) Union.

"The bent of civilization, (says one, entitled to consideration,) is to make good things cheaper;" and the most efficient mode of doing this, is to bring distant places nearer, by well constructed thoroughfares. No Virginian, however,—and especially, no inhabitant of the county of Rockbridge—would be willing that the scale of civilization should be graduated by the character of our roads. Our state is notorious for her highways throughout the Union; and if the horses of "Old Virginny" never tire, they are better off than their visitors from the plains of the south, or the turnpikes of the north—and through our own county, would be the "*hic, labor hoc opus*" part of a journey from the seaboard to Santa Fe.

This is not to be attributed altogether to our want of enterprise, or of topographical ability; for we have the opinion of one in that line, that almost every man in our county was a natural engineer. It may, I think, be traced to the injudicious provisions of our road law, and, as the spirit of improvement is now awakening in our county, it interests us, that any obstacle, springing from defective legislation, should, if practicable, be removed.

No law can be thoroughly carried into execution, if it is not sustained by the moral sense of the community; and this is not, because it is unjust in its entire organization, in laying the burden of opinion and keeping in repair the roads of the country, altogether upon the tithables—that is, upon persons, not upon property, when in fact there would seem to be a peculiar fitness in making this a land-charge, as the immediate effect of good roads, is to enhance the value of that species of property, by giving increased facilities to the transportation of its productions. Under this system, the mechanic, who works in his shop, and owns neither land, wagon, carriage, or horse, pays for the opening of a road, for the better access to mill, by some half a dozen individuals, as much as any of those, whose convenience is aided, or whose property is increased in value. But if the road is opened by unjust taxation, it is kept by unequal contribution of labor. "All male laboring persons of the age of sixteen years or more, except such as are masters of two or more male laboring slaves of the age of sixteen years or more, shall be appointed by the court to work on some public road." Thus it may happen, that an overseer with a son seventeen years old, may do more work, than his employer, through whose farm the road passes—and here again the mechanic, with little interest, is held to equal contribution. But a system might be tolerated though unjust and oppressive, if it was efficient; but this is deplorably weak. The surveyor will not call as often as necessary upon his hands, because he feels unwilling to be the instrument of exacting a burdensome tax; and then no jury will impose a fine upon a surveyor, because they know his difficulties. And even when the *tithables* come to the road to prepare it for a session of the grand jury, a work engaged in reluctantly, and moreover, unfamiliar to all, goes on slowly by hands who have to come five or six miles, and then return as far by night.

No road, even the best located, could be kept in complete repair under such a system; and how lamentable then the deficiency, when applied to our roads, which climb a hill only because the ground is less valuable for agriculture than the vale below—where a long circuit is made because a line fence is in the way—where huge rocks are left to wear away by the gradual attrition of the wheels—and where mud-holes are mourned over as a necessary evil. And this original fault of location is to be laid at the door of our road law. If any one applies for a road, the viewers are appointed upon his nomination, and are, of course, men who agree, (honestly enough, no doubt,) with him in interest and opinion. Upon their report, if unopposed by others in the neighborhood, the road is similarly established; and thus, if by running up and down hill, and turning to the right and to the left, the neighborhood can be accommodated, the public interest is but little regarded. And this evil soon becomes a parent one, almost unsusceptible of remedy; for men begin to build upon a road, and make their improvements, and lay out their farms by it, until the road, as it were, takes root amongst them, and removal is almost impossible. Other objections have been urged against the present system; but, if those I have noticed be not exaggerated, they are sufficient to call for some attempt at improvement; and he of our legislators, who would project and carry through a road law, free from the defects of the present, and in other respects efficient, would merit our thanks as a public benefactor. J. J.

THE "SOUTHERN LITERARY MESSENGER."

We respectfully ask that the attention of our readers may be directed to Mr. White's prospectus, on our advertising sheet, of a new literary periodical; and hope that many will aid in giving it extensive circulation. It is indeed strange, that no periodical of a character entirely literary, should exist in all the states south of the Potomac—and Mr. White will perform a most valuable service to the southern states, if he can fill the existing void. Certainly this great region contains an abundance of the kind of talent requisite and competent to support a literary journal. We know not to what extent Mr. White may be enabled to draw upon this great, but now unproductive fund of southern talent—but every such acquisition will be a new value brought into being—and still more a public than a private benefit. Without works of this kind, there exists almost no inducement to engage the pens of men of literary taste and retired habits—unless, that for want of more congenial employment, and better objects, they engage in the miserable and degrading warfare of party politics.

Mr. White's taste and ability as a publisher, are well known to the public. Some works from his press, (for example, the second edition of Judge Gaston's Address to the Philanthropic and Dialectic Societies of Chapel Hill,) deserve to be ranked among the most beautiful specimens of typography. In this respect, we believe that his ambition as a publisher, would induce him to go beyond his duty to his patrons.

We will take pleasure in receiving and transmitting to Mr. White the names of any of our correspondents who may wish to become subscribers to the Southern Literary Messenger.

THE SCARCITY AND HIGH PRICES OF FOREIGN AGRICULTURAL BOOKS IN THE UNITED STATES—AND PROPOSAL OF A REMEDY.

"Books are printed and sold in this country, at less than the first cost in England: and, consequently, the duty of 15 per cent. on imported books, is required neither for revenue, nor the protection of the home manufacture. Its immediate effects, as it regards the pecuniary national loss, are inconsiderable: but no part of the tariff can produce more of ultimate injury, when compared with the very slight benefits, expected from this duty. All the European works for which there is an extensive demand, are immediately furnished to the public, by American publishers. Thus we are regularly and cheaply supplied with all the trash intended for the circulating libraries of England. But many works of great intrinsic value, which from the nature of things, would have but few readers, cannot be profitably reprinted here; and the duty obstructs or prohibits their importation. The most striking example of this evil, is found in the difficulty with which European agricultural works are obtained. In no other class is more discrimination necessary, for selecting such as are valuable, from the worthless mass; and none, even of the best, have fewer purchasers, or readers. We know of but three European volumes on agriculture, which have been republished in the United States; and works of this description were seldom or never imported for sale, until within the last few years. The spirit of enquiry which has lately arisen among farmers, has in some measure counteracted the prohibitory tendency of this duty. Our booksellers have imported some valuable works, and (as might be expected) still more which are useless; and the necessary high price of all, has allowed so little profit to the importers, that we understand, no expectation remains of a repetition of the experiment. We admit that the most unreasonable price might not deter an individual from importing a work for his own use, the contents of which he knew to be valuable. But our prohibitory system has allowed so little information on this subject, that but few individuals can form a just opinion of the merits of any foreign agricultural publication, until all the expenses of its importation are incurred. The injury which may be sustained from this kind of deprivation, cannot be estimated by dollars and cents. To oppose any obstacle whatever to the progress of intellectual improvement, presents a singular feature in the policy of a free government: yet not content with the present duty of 15 per cent. on foreign books, it was proposed in 1820 by the Committee of Manufactures, and actually passed the House of Representatives, to increase it to 35 per cent."

The foregoing well founded complaint was made by the *United Agricultural Societies of Virginia*, in 1821, in the Report which accompanied their third and last petition to Congress for the relief of agricultural interests from the burdens imposed by the protecting duty system. The struggle which was then going on between the supporters of free trade and agricultural interest on the one side, and of prohibitory duties and manufacturing monopoly on the other, was ended in 1824, by the complete victory of the latter party. Since that time, we have not traced the progress, and noticed all the changes, of this, or any other class of duties, which were intended to be prohibitory; for if that end was effected by a duty of only 20 per cent. the tax could not be made more oppressive; and in that case, our rulers were content not to raise the rate. With regard to agricultural books, the state of things remains much the same as was described in the foregoing extract. The present duty on English books, imported for sale, is 30 cents the pound (weight,) if bound, and 26 if in boards; and the tax, together with the high cost, serve to make importation for sale, too hazardous to be undertaken, except irregularly, and under some peculiar circumstances—and the farmers of this country continue to be deprived of all the light and instruction that might be derived from that source.

It may be said that it is impossible that the former duty of 15 per cent. or even double that amount, could materially check the introduction of works of real value. That might be true, if this value was known; but the intercourse which would otherwise have existed, has been so completely prevented, that it is almost impossible for a farmer in Virginia to know how to select foreign agricultural works, for his own use—or a bookseller, for the purpose of selling again for profit. Perhaps in no department of literature (if that term may be so applied,) is there so much of worthless trash, compared to what is valuable, as in the whole mass of works on agriculture: and the purchaser who selects them at hazard, or merely by the titles, will, nineteen times in twenty, obtain a very poor remuneration for their cost. Neither will the name of the author be a much safer guide. Some of the best informed agricultural writers, (as Marshall and Young,) whatever were their merits, were regular *bookmakers*—and instead of aiming to furnish the best ideas, and the most instruction, in a form as much condensed as the subject

admitted, it was their object to spread their matter through as many pages as possible, and to present the same in as many different works, as their booksellers would buy, and their readers would tolerate. Besides, in addition to the risk of buying a worthless book, the American importer had the certainty of having a very high priced one, owing to the fashion in England of publishing most books in a very expensive form. For example—our copy of Dundonald's Connexion of Chemistry and Agriculture, was obtained by sending a special order to Philadelphia, and cost $7 25. It is a thin quarto, without plates, and containing only two-thirds as much matter as a single number of the Farmers' Register—and therefore could be furnished by republication in that work, at a cost of about 30 cents. The only copy of Elkington on Draining, that we have seen for sale in Virginia, was bought at $5; this work contains about as much as one of our numbers, and might cost 60 cents on account of a number of plates being required. At these rates, a duty of even 15 per cent. amounted to more than the whole cost at which such books could be published and sold in this country—and a government that was wise, liberal, or even just, would have taken off the whole of a duty, which brought almost nothing to the treasury, and so much increased the great existing obstacles to the introduction of agricultural knowledge. Whatever may be the causes—whether the duty on importation, the original high prices, or our own carelessness and disregard of knowledge, may be most operative—the effect is, that scarcely any foreign agricultural works have been imported for sale in Virginia, since 1818, and very few republications have been made in the United States. For the purpose of making selections for the Farmers' Register, and to enable us the better to execute the duties which we owe to our subscribers, we have ordered a small importation of agricultural works, by guessing at their contents from their titles—but with the expectation, founded on former similar adventures, that much the greater part of the expenditure will be thrown away on publications of little worth. No second trial of such purchase would have been attempted, merely with a view to individual gratification or instruction.

The English works named above, it is admitted, present cases of unusual high prices: and farther, it is probable, as a cheap style of publication has lately become common in England, that many agricultural works might now be bought at much lower prices than formerly. If so, the fact would furnish an additional proof of the baneful operation of our restrictive duties: for so complete was the cessation of importation, and consequent loss of acquaintance with such works, that this supposed reduction of price has not had any effect in increasing purchases. The spirit of speculation (which affected this, as well as other branches of trade,) in 1817 and 1818, brought more foreign agricultural books into our country, at the then enormous prices, than all the demand, and subsequent reduction of price have done, within the last ten years. It is believed that there is no collection deserving the name of an agricultural library, public or private, in Virginia; and the few wealthy and liberal farmers who have made any considerable collections of such works, have obtained but little matter of real worth, in return for a heavy expenditure. It is for others to say whether the state of things is better in other states of the Union.

The prohibition of supply caused by the combination of the different causes mentioned, has finally operated to produce a cessation of all effectual demand for foreign works on agriculture. This is sufficiently proved to be the opinion of our booksellers, by their not republishing such works for sale. But though they may be, and probably are, correct in this respect, there is still a cheaper form and manner of publication, by which agricultural works may be furnished, viz: in periodical numbers, and upon previous subscription. If this was done, for example, in monthly numbers of the form and size of the Farmers' Register, about thrice as much matter would be given for the same price, as is done in most American editions of such works—and from five to ten times as much, as many English editions furnish. In this manner, a choice collection of standard agricultural works could be obtained, at a price so low as to be within the means of almost every industrious farmer—and yet presenting what would be in intrinsic value, in number, and also in neatness of mechanical execution, a better collection, than the most wealthy and liberal have yet been able to procure.

This plan is submitted for the consideration of the readers of the Farmers' Register, and the agricultural community in general—and if there should be sufficient indication of its being well supported, we will hereafter execute what is here proposed. The matter suitable for this *Farmers' Library* and that for the Farmers' Register, would be altogether different, and the one publication could in no respect interfere with, or lessen the value of the contents of the other—while there would be many obvious advantages from the kindred works being under the same editorial direction. The extensive correspondence, the general acquaintance with books and with persons, which is desirable for conducting either publication, will equally conduce to the better management of the other. And as the usefulness and interest of the proposed republication, can have no territorial limits, there is no reason why it may not be highly acceptable to many intelligent farmers, in each of the United States. But we beg not to be considered as expecting the subscriptions of any persons, because they have already aided the Farmers' Register. No such claim is made. If the plan proposed is in advance of the wishes of the farmers of our country, or has not sufficient claims to support, independent of all personal favor to the editor, it ought not to be supported: and no patronage would be permanent or profitable, that was not founded on a real demand for the work, founded on proper considerations of its usefulness.

It is not pretended that every volume thus published, however carefully chosen, could furnish either instruction or entertainment to every one, or even to the majority of subscribers. Many of the most valuable works are for reference, and not intended for regular reading; and no mode of selection could possibly suit every reader. But even if it should happen that three-fourths of the whole matter thus furnished should be as useless, and as little read, as (necessarily) is as large a proportion of almost every newspaper, the remainder would amply repay the cost. Independent of individual advantage, the wide dissemination of such works,

at this cheap rate, would be a general and public benefit, towards which public spirited citizens might contribute for the promotion of the prosperity of their country, without danger of being mistaken in the result: and still more may be hoped from the patronage which may be offered, from similar views, by agricultural societies, and by the different legislatures of the United States.

Since writing what is above, the arrival of some works lately purchased in London, permits the following comparison to be made of the present English prices with those of the proposed republication. The works are not cited as possessing peculiar value in this country, but because their cost and amount of contents are known.

Radcliff's *Agriculture of Flanders*, cost in London, 13 shillings sterling, or at the usual rate of exchange with this country, $3 12, without counting the duty, or any other charges on the importation. This might be republished in 72 pages of the Farmers' Register, and at the cost (to subscribers) of 47 cents.

The *Complete Grazier* (6th edition, 1833) cost 17 shillings, or $4 08, in London. This work would fill 220 such pages as those of the Farmers' Register, and might be published in like manner for $1 50.

The most esteemed agricultural periodicals now in the course of publication in England, are the *Quarterly Journal of Agriculture*, and *British Farmer's Magazine*. The price of the former was 6 shillings the No., in London, and of the latter, 4 shillings—or $9 60 a year for both, omitting (as before) the duty and other charges on importation. Both of these periodicals can be published entire, in less than two-thirds of one volume of the Farmers' Register, and might be furnished to subscribers for $3 a year for both.

These statements of prices will best show what may be gained by subscribers to the republications proposed. The plan has been long in contemplation: but it would not have been announced until more time had been taken for reflection, and consultation, but for the unexpected necessity of the printing of the Farmers' Register being moved to the country. The inconveniences, which threaten to attend the establishment of a country press and publication office, will be much lessened, if not completely obviated, by giving profitable employment to some additional printers, so that enough of them, possessing the best qualifications, may be always retained. To furnish such employment, is an inducement to hasten the trial of this plan; and, accordingly, proposals to publish the FARMERS' LIBRARY will be issued without more delay.

THE TORNADO.

To the Editor of the Farmers' Register.

Petersburg, May 10th, 1834.

Dear Sir—I will give you my impressions on the recent whirlwind, which is all the talk now. The clouds were gathered thick and dark in the west—which was all covered except a narrow stripe of clear sky just above the horizon. Presently, the cloud at one end of this clear belt assumed an extraordinary aspect, which I can compare to nothing better than to dense smoke issuing from a furnace. For some time it appeared to be stationary, the cause of which I suppose was, that it was advancing in a right line towards me. At length when it had approached near enough to be more fully seen, it presented a regular figure—an inverted cone, funnel-shaped—not unlike a vast balloon. Being black, and relieved on the clear white back-ground of the sky, the cone was very distinctly visible. By this time I concluded it was no freak of the clouds, but a water-spout—as I termed it, from its similarity to plates of water-spouts in books. Suddenly the cone dashed off through the top of the trees, at a right angle to its previous direction. I then resolved that it must be a fire in the woods. This was a transient hypothesis however; for the balloon soon came in full view, and it was manifestly whirling on its axis, and describing a rapid curve around the south end of the town. The dense cone of clouds seemed all the while boiling up like a vast cauldron: And a muttering lumbering thunder was audible; sounding like a car dragged with locked wheels over rugged ground, "grating harsh thunder." As soon as the cone had passed the town, in the west the sun burst out "bright as the sun of Austerlitz;" in the east the clouds were piled in grand masses and fragments, in wild incongruity, and to crown the scene, a rainbow in a moment threw its span over the lurid sky. The effect was perhaps worthy of a word, too often misapplied—the word sublime.

By reference to a Cyclopædia, I have since found that a whirlwind and a water spout are essentially the same; that is, if a whirlwind should pass from land to water, as sometimes happens, the whirlwind would produce or become a water spout.

Malte Brun explains the phenomenon in this way. Two winds meet—a vortex ensues—any cloud which happens to lie between them, is condensed into a conical form, and turned round with great velocity. This rotation impresses all the particles of the cloud with a centrifugal force; they are driven towards the exterior surface; a vacuum is produced within, about the axis of the cone; water *or any other body*, lying beneath this vacuum is carried into it, by the effect of gravity striving to re-establish an equilibrium. *Vol.* 1, *Physical Geography*. C.

EFFECTS OF THE TORNADO IN PRINCE GEORGE AND ITS TERMINATION.

To the Editor of the Farmers' Register.

Dear Sir:

At your request I attempt to give some account of my observations on the course and effects of the dreadful whirlwind, which traversed a portion of this county on Monday the 5th of this month, between three and four o'clock in the afternoon. We have learned from other sources that it commenced near Hungry Town, in the county of Lunenburg, and after passing through Nottoway and Dinwiddie, skirted the southern boundary of Petersburg and entered Prince George. My own examination of its track was begun at Mrs. Thweatt's residence about two miles above the Court House. There its violence and the effects of its fury were more evident than at any other place which I have visited, probably from its having crossed a greater extent of open land before reaching the dwellings. Every house upon the place, with the exception of the family residence, and

one other protected by a row of very large locust trees, was levelled with the ground or hurled in shattered fragments through the air. The lighter articles, such as shingles, corn and tobacco from the cribs and barns, were blown, in some instances more than a mile. Many of the negroes were wounded, and one killed by the fall of the houses and chimneys, and some of those who in the alarm had rushed from the tumbling ruins, were raised up into the air and transported to considerable distances. The track of the whirlwind at this place was (I think) fully a mile wide. As it was difficult, from the number of trees which were blown down, to visit every place at which I had heard of the ravages of the wind, I confined my investigation to crossing its course at such points on the roads as could be most conveniently done. After leaving the court house, jail &c., which were just within the outer circumference of the vortex, and suffered but little injury, I took the cross-road nearly two miles lower down, leading from the stage road to Branchester Mill. At rather less than half way between these two points, the fury of the storm appeared to have been unabated, from the number and size of the trees that were prostrated, none standing except such as were small enough to yield to a shock which none were large enough to withstand; but the width of the desolating blast was not more than half a mile at this spot. Where I next crossed it, at about four miles further on, its breadth was yet more diminished, and at the house of Mr. Benjamin Fenner, (some two miles farther) it was not more than three hundred yards wide. But the evidences of its fury were as distinct as ever: out of ten houses in his yard but three remained standing. And here was furnished a convincing proof that the devastation was occasioned by a whirlwind proceeding, (in a nearly direct line) with a violent rotatory motion, and not by a hurricane blowing from one point of the compass to an opposite one. Two of Mr. Fenner's houses stood nearly opposite, on the east and west sides of his yard: these were unroofed, and carried towards each other so as nearly to meet in the middle of the yard. This proof, however, was afforded throughout its whole course by the trees, which at some points lay thrown with their heads generally towards the east, and at other places, within a very short distance, they as generally fell to the west. Many particular trees were observed lying transversely to the general direction of those near them, and in many instances the trunks of the largest trees were twisted off at various heights from the ground, as if by some powerful engine. At about a quarter of a mile from Mr. Fenner's, the breadth of the wind's track did not exceed one hundred yards, and not far from this spot I lost all trace of its course, in a thick wood of the same sort of trees as those which it had overthrown for the preceding half mile. It thus appeared to terminate abruptly, retaining to the last its full force and velocity, for at but a few yards beyond the place where the last trees were thrown down or wrenched off, the wood bore no sign of having suffered from even a moderate gale. As it may be supposed impossible that a whirlwind, proceeding with a violence sufficient to uproot the strongest trees of the forest, should stop at once so completely as not to leave a fallen bough or leaf to mark its further progress, the conclusion seems irresistible that it ascended suddenly from the earth, rose above the tops of the wood, and spent its remaining fury in the upper air. Might we not suppose that it had formed an inverted cone, compressed and flattened at the bottom, or rather a frustrum of a cone, generating, by a gradual but irregular upward expansion of its axis, a true cone, until its apex being completely formed, its attraction to the earth was overcome, and it rose suddenly into the upper regions of the atmosphere? I am the more led to this supposition from having observed the little whirlwinds so frequent in our hot summer days, which, after raising dust, straws, feathers, and other light substances from the earth, cease to mark their further progress upon the ground, but continue to whirl about the articles already collected, till their strength is dissipated, sometimes at a considerable height in the air. The point at which I consider the whirlwind to have ascended, is about a mile and a half south of James River, and the same distance west of Powell's Creek.

You will have observed, that I speak only of so much of this awful visitation as fell under my own view; but when we reflect that this scourge pursued a course of about seventy miles, the aggregate amount of its havoc must have been immense. I have heard the damage in this county alone, in houses and timber, estimated at various very large sums; but as these estimates do not seem to me to have been founded upon any very accurate data, I forbear to repeat them. Yet amidst all this loss and suffering, it is a consoling recollection, that while numbers of beings were exposed to this imminent, and, to them, inevitable danger, the hand of Providence has been so careful of human life that we have heard of the deaths of not more than ten persons. H.

Prince George, 11th May, 1834.

ON THE CULTIVATION OF POTATOES.

Addressed to Daniel P. Curtis, Esq. and communicated for publication in the Farmers' Register.

Pleasant Point, Warwick county,
March 12, 1834.

Dear Sir:

I promised you, some time since, to give an account of my mode of cultivation, and preservation of the Irish Potato *(solanum tuberosum)*—but, really, the duties of a country physician are so very arduous, that the time has not been my own, or the promise would have been redeemed long since. That one who has been engaged in agricultural pursuits only eight years, should give a useful dissertation on many subjects therewith connected, is not to be anticipated; but crude and irregular ideas may lead others, more experienced, to continue the subject to advantage; at least to those like situated with myself, who are compelled to cultivate poor land. Without further remark, I will proceed to give you the history and cultivation of the Irish potato. This species of *solanum* is properly a native of Peru, and may in truth be said to be the most nutritious of all the species, and I am confident there is none more productive, or more easily cultivated. Doctor Baldwin, late surgeon of the United States Frigate Congress, found this vegetable growing abundantly on the north side of the Rio de la Plata, in wild, uncultivated situations, and entirely unknown to the inhabitants. He also informs us of its being found

growing among the rocks in Montevideo, and in the vicinity of Maldanado, in the sand hills on the river shore; but he assures us, the potato thus found was far inferior to it when cultivated; the vegetable itself we all know to be very delicious; it might properly be classed among the Cerealia, except that it affords no gluten or animal matter; and but for the circumstance of the potato containing so much water, amounting nearly to one half of its weight, it would yield as much nourishment as the cerealia; this circumstance however renders them of easy digestion. Notwithstanding the strenuous exertions of M. Parmentier, who excited the philosophers of his country to bring it into notice as an article of food, many of the higher order among Europeans were very slow to admit it into the list of aliments—whilst the vulgar, without theory, and by the dictates of experience alone, became reconciled to, and fond of it. The potato yields us a very fine starch, which answers well most of the purposes for which that article is used.

I am in the habit of planting my potatoes the first good weather in February, and preparing the ground in the following manner. I plough my potato lot very deep in January, and drag it repeatedly after the ploughing; it remains in that state until ready for the planting of my crop. I then throw the land up in very high beds, four feet apart. These beds are then split by a deep furrow, forming a considerable trench. The land being thus prepared, I bring from the shores of James river, at my landing, a considerable quantily of sea grass, which is continually thrown up by the ebbing and flowing of the tides. Each trench then is well lined with this marine plant, and suffered to remain open a day or two, at the end of which time, I plant all my largest potatoes, cut into three pieces, but if small, planted entire, about four inches apart; when they are all thus dropped in the trenches, the sea grass is again applied over them, and with a plough I commence to cover up my crop, throwing the dirt well up, and forming a high ridge over the trenches. The crop being thus planted, it requires no interference until the second week in April, and then I run a plough close enough to cover the potatoes, all but the top leaves.

This constitutes all that is necessary for the first working, and the second is like the first, with one exception, which is, that the ground between each trench is broken with the plough, to render it more soft for the third and last ploughing, otherwise you might interrupt the potatoes when your plough is run the last time; the sole object of which is to throw more earth upon the ridge which may have been washed down by the rains at that season of the year. I am, as you are well aware, in the habit of making large crops of potatoes. Some years I send them to market at Old Point, or Norfolk, but always use them freely to my negroes, and in my white family. I sold them last summer very readily for seed at sixty-two and a half cents. I had a quarter of an acre of potatoes growing very flourishingly, and I took a scythe and had them cropped down to the earth. I had another parcel I did not crop at all—and a third cropped long after the blossom showed itself; the result was, that those that were not cropped, proved to be the smallest; those cropped earliest, the largest and best; and those cropped the latest, partially benefited. This plan of cropping is particularly desirable if you have a long dry season; otherwise the rapid growth of stalk and leaves will completely exhaust the potatoes that should be forming in the trenches. I have used various other manures, and find all long manures good; but the more salt, or its properties you use, the better; the stable manure is particularly good from the saline matter it contains; what we call woods manure is the most indifferent I ever used; but if it is soaked in salt water it is greatly improved.

I was last year presented with some red potatoes; I found them to grow very large, but they are of a more cohesive texture, and not as palatable; I intend to plant some of them in my corn field, when I work it for the last time: I shall plant them indiscriminately, and use no means of cultivation. These I intend for my cows in the winter.

This is pretty much the amount of what I have practised as to the production of potatoes. I found it, however, a matter of great moment to ascertain the proper method of preserving them, and in fact, I devoted much attention to the subject. This I found to be a difficulty which most of my neighbors encountered as well as myself; some kept them in cellars, others in barrels, but none of them appeared satisfied with them for seed. I made repeated inquiries of the Long Islanders who come among us for oysters, as to the mode in which they keep them. The information I got from them, was, that their seed potatoes were planted in June, and dug in October, and put up in barrels with hay, and that they kept well for every purpose. I was in the habit of purchasing seed potatoes from these persons. I formerly got them from the New England vessels that bring them to Norfolk in large quantities, and sometimes sell them for seed as high as one dollar and twenty-five cents the bushel: I have not however used any potatoes for seed the last three years, but of my own keeping: and if your potatoes are planted and made as herein advised, I will insure, that you will have good seed and good eating potatoes during the winter, taking care always to have the trenches well filled with this sea grass, which yields a sort of kelp by its decay; the sea weed, or sea grass to which I refer, is the same so ably treated of by Thomas Griffin who has written much on its properties in the American Farmer, years ago. The trenches being so prepared, and the potatoes cultivated as above, you have a barricade formed by the decayed vegetable sea grass within, in the state of kelp, and a matting of wire, and other grasses and weeds without, through which the most intense frost will never enter, and your potatoes may be removed at pleasure, dry and smooth for use or seed.

The above is what I promised you on the subject of potatoes. If you deem it of sufficient interest, you may insert it in the Register.

With the utmost respect, your ob'dt serv't,

G. LANE CORBIN.

Daniel P. Curtis, Esq.
Mulberry Island, Warwick County.

GESTATION.

From the Genesee Farmer.

The period of gestation, or the length of time, which different animals go with young, should be known to every farmer: that the season of copula-

tion with his different kinds of stock, may be so regulated, as to have them bring forth their young, under the most favorable circumstances.

Mares go a few days over eleven months, with foal.

Cows go about forty weeks, or ten lunar months.

Ewes bring forth at the end of five months.

Goats, at four and a half months.

Sows at four months.

The term of incubation, or time which different fowls set upon their eggs, before hatching, is as follows:

Swan sets six weeks.

Turkey sets thirty days.

Goose, from twenty-seven to thirty days.

Duck, from twenty-seven to thirty days.

Hens, twenty-one days.

Pigeons or Doves, fifteen days.

STRANGE MODE OF CURING A VICIOUS HORSE.

I have seen vicious horses in Egypt cured of the habit of biting, by presenting to them, while in the act of doing so, a leg of mutton just taken from the fire: the pain which a horse feels in biting through the hot meat, causes it, after a few lessons, to abandon the vicious habit.—*Burckhardt's Travels.*

MONTHLY COMMERCIAL REPORT.

To the Editor of the Farmers' Register.

Sir:—There were some slight indications of a favorable change in the aspect of commercial affairs last month; but they were merely momentary, and the distress which for some time past pressed heavily on the communities of the large commercial cities, has at length reached our own.

Heretofore the effect was felt by us in the diminution of our intercourse with the northern states, in the reduced demand existing in them for our products, in the difficulty of making remittances, and in losses sustained by our merchants from failures in the large cities. But the pressure has now reached Virginia. Her monied institutions, which for some time past have been prudently granting very moderate facilities, now find it necessary not only to withhold *them*, but to reduce those which previously existed. This commendable caution renders our banks safe, and none sustain a higher credit; but the distress on the community is great and increasing.

The disastrous fate of several banks in the adjoining states, is a warning to others. The frequent transmissions of specie from one place to another, show that even the most favored institutions require strong efforts to sustain their credit unimpaired. These demands for specie first at one point, then at another, cramp the business of all banks, and reduce the circulating medium below its ordinary ratio. Rumors, the most unfounded, are circulated by the thoughtless or the designing; and the timid or credulous holder of bank paper, is made the dupe and the prey of the knowing money-dealer.

The prices of produce and rates of exchange are very unsteady. Flour has again fallen from $5 to 4 3-8—Tobacco has also declined in price—Cotton, now worth 12 to 13 cts. is the only article, the price of which is supported; and this probably will soon partake of the general depression, unless sustained by a continuation of orders on European account. Exchange on England, which had reached 5 per cent premium, is again verging down towards par. The coal trade, a most important one to James River, has declined very greatly, in consequence of the suspension of extensive iron works and other establishments, at the north, which consumed large quantities of that fuel. The business of manufacturing tobacco, which employed many hundred, nay, some thousand hands, has been reduced to a mere fraction of what it was. Thus the workmen engaged in various occupations, and also numerous coasting vessels, are thrown out of employment.

But I am weary of the repetition of these unpleasant subjects, and refer you to the annexed remarks from an English paper.

May 10th, 1834. X.

"*The American Trade.*—The unparallelled embarrassments amongst the commercial classes of the United States, have produced a great stagnation in the trade between this country and that recently flourishing republic. The numerous failures which have occurred in New York, Philadelphia, Baltimore, and the other cities of the union, have been felt both directly and indirectly in England. Directly in their effect on individual firms, and indirectly in their effect on the general state of credit.

There is of course, a great indisposition on this side of the Atlantic to risk goods or to enter into commercial transactions at present, in a country in which undoubted solvency and unblemished integrity are no securities against embarrassment and ruin, and the commercial classes on the other side find too much difficulty in meeting their engagements in the present disordered state of trade and suspension of credit, to have either disposition or ability to extend their concerns. Thus the prospects of a vast and profitable trade with the United States, which only a few months since seemed so bright, have been clouded, and it is impossible to tell when the cloud will pass away. A rancorous spirit of party seems to have destroyed every thing like reasonableness in the government. Under these circumstances, the close and intimate connection between the American Republic and the British Empire, compels us to endure a considerable share of the inconvenience resulting from the embarrassments of our trans-atlantic friends and customers. The exports of iron, woollen goods, cutlery, hosiery, and we have no doubt of all other articles, have received a severe check, from which they will not recover until the Americans and their government recover their senses. When that will be it is impossible to guess, for up to the latest accounts, the exasperation of all parties seem only to be increased by the increasing misery of every class of the people. Each party lays the blame on the other, and none does any thing to restore public or private confidence."

London Courier.

A CARD.—X. requests that the printer will not *corrupt* his meaning, as he has done in some instances. The last and most flagrant one is in page 704, where "the usual competition of our merchants," is made to read "the usual corruption of our merchants!"

TERMS OF THE FARMERS' REGISTER, VOL. II.

The Farmers' Register is published in monthly numbers, each containing 64 pages, large octavo, at $5 a year, payable in advance. The mechanical execution of the work will be in the best style of *book printing*.

There are no agents authorized by the editor to obtain subscribers, or to receive payments for subscriptions. But any person may constitute himself an agent for others, and shall receive an extra copy of the current volume, by sending the names of 4 subscribers, and $20, at one time: or any five new subscribers may, in like manner, obtain their first year's copies for $20, or at $4 each. But it is expressly declared, that no such compensation will be allowed hereafter, unless when all the names are sent at once, and with the payment in advance.

The editor assumes the risk of the mail, for all payments made to him on account of the Farmers' Register, whether the person sending such payment has received any part of the publication previously, or is transmitting payment in advance, as a new subscriber. The evidence required for such transmission of money to the editor, will be either the certificate of the postmaster, or of some other person, of the letter containing the sum, having been placed in the hands of some postmaster, or his assistant.

The notes of any specie paying bank chartered by the state in which the subscriber resides, will be received in payment for subscriptions: but an additional favor will be conferred, by sending notes either of the Bank of Virginia, Farmer's Bank of Virginia, or the Bank of the United States.

When a copy of the Farmers' Register fails to reach any subscriber's post office, a duplicate copy will be sent, provided the following conditions are complied with, viz: First, that the postmaster states that the missing number, or package had failed to reach his office—and, Secondly, that the application for a duplicate comes from a person who has complied with the terms of subscription. The editor incurs much expense, and responsibility, to secure complete sets to all subscribers: and it cannot be thought that he requires any thing unreasonable, in the simple and easy conditions attached to his fulfilling such unusual obligations. This guarantee of the receipt of every number, will compel, (even if other considerations did not,) the giving every proper care to mailing and directing the copies.

No subscription will be permitted for less time than a year—nor hereafter, to commence otherwise, than at the beginning of a volume.

If a subscription is not directed to be discontinued, before the first number of the next year has been published, it will be taken as a continuance of the subscription for the ensuing year: and no subscription will be discontinued while any thing remains due thereon, except at the option of the editor.

The plan of publication remains as announced in the proposals for the work, (No. 1, Vol. I:) the like subjects only will continue to be discussed, and the "improvement of the practice, and support of the interests of agriculture," will still be exclusively the objects of the publication. The editor will reap no profit at the expense of his readers, by admitting advertisements into his pages; nor will he lighten his labor and expenses, by the insertion of any matter unsuitable to the work, and not considered useful or agreeable to his subscribers.

TO SUBSCRIBERS.

The distance of the place of publication of the Farmers' Register from the residence of its editor, has proved a source of much inconvenience to both the publisher and editor. It became evident, that to do justice to his work, to his subscribers, and to his own interest, there was no choice for the editor but to change his residence to Richmond, or to bring his printing to his home in the country: and the latter alternative has been adopted, as involving the smaller pecuniary sacrifice. The novel establishment of a good and complete printing office in a country place, may possibly bring upon the proprietor new difficulties—but the risk will be all his own, while most of the benefits of the change will accrue to his subscribers. By incurring the heavy expense necessary to make this establishment, he has given a new guarantee to the public, of his devotion to the work he has undertaken, and of his confidence in its stability. No expense or care has been spared to insure that the Farmers' Register shall be as well printed at the Shellbanks press, as heretofore in Richmond: and the high praise which has been so generally and so deservedly awarded to Mr. White, the former publisher, for the excellent mechanical execution of the work in general heretofore, is sufficient evidence of the character the Farmers' Register has in this respect acquired, and which it must preserve, or suffer immediately and greatly, in the public estimation. By this mode of comparison the future publication will be tested—and by this standard the present publisher is willing that his work shall be judged. In other respects, of more importance than the mere beauty of form and appearance, some improvement in the publication may be expected, from the immediate supervision of the editor. The last sheet of this number, beginning with page 753, is the first issued from the new press.

As the Shellbanks post office is on the main mail coach road from Norfolk to Petersburg, every facility is afforded for the distribution of the Farmers' Register, that could be found in any other place of publication. No disadvantage will be suffered from the change, by any subscriber. Those only who have heretofore received their copies at the publication office in Richmond might sustain some inconvenience, if not guarded against by the editor. But their situation will be kept unaltered, by their copies being sent, free of expense, to a place of delivery in Richmond.

The publication of the Farmers' Register is no longer an experiment of doubtful result, for which its best friends entertained much more of fear, than of hope. Contrary to almost universal expectation, the success of the work has been such as to leave no ground for fear or doubt: and the prospects of extended circulation and increased usefulness, are every day becoming more sure. This success, this usefulness, and the beneficial influence already attributed to the Farmers' Register, are altogether owing to the many and able contributors to its pages. While such aid continues to be afforded, there will be no danger of diminished value, or interest, in the publication; without such aid, the

editor is ready to admit that his work will sink—and without such, it never could have risen to a station either of usefulness, or celebrity.

To the great majority of his subscribers, the editor owes thanks for the readiness with which their payments have been made, though payment in advance was not required for the first volume. The names of those subscribers who may remain in debt for Vol. I, one month after its being finished, and whose remote places of residence entirely prevent their subscriptions being collected, will be struck from the list. If any should be improperly included in this measure, by mistake, the error will gladly be corrected: and any who have thus fallen into arrears merely from inattention, will be able to have their names reinstated. The absolute necessity for such a rule will be apparent to all, and ought to serve as a sufficient apology to any to whom it may be applied improperly, from ignorance of their character and responsibility. The Farmers' Register during the first year of its existence, has been sent to every one applying for it, without payment accompanying the order, without knowledge of the subscriber, and in many cases to the most remote parts of the United States. Under these circumstances, many losses are to be expected—and the degree of promptness in making payments must be the principal means by which such remote subscribers can be known, and be properly estimated. As the risk of payments in advance for new subscriptions, as well as for those already on the list, is expressly assumed by the editor, there remains no reason for every order from a new and unknown subscriber, not being accompanied by the subscription money.

In consequence of the *transition* state of the publication and business of the Farmers' Register during the last month, it is probable that some of the orders of subscribers have not been executed. Any such omissions, or mistakes, will be put right, as soon as made known. The same circumstances have also made it impossible to publish a complete list of payments, for the previous month as usual, on the cover of No. 12, and therefore it will be deferred until No. 1 of volume II appears, which will be early in June. The full list of subscribers to volume I, and the general table of contents, will be furnished at the same time.

Subscribers when writing any directions relating to their subscriptions, copies, or payments, are requested always to name the post office, to which their copies have been previously addressed.

Copies of Vol. I, of the Farmers' Register can still be furnished to new subscribers.

Subscribers who have failed to receive any of the Nos. 10, 11, 12, shall certainly be supplied with duplicates, on proper application being made. But when a whole package for any post office has failed, it is requested that full time may be allowed for its return from its improper route. In some cases of such failures, duplicates have been furnished, and afterwards the first package was received: which has been either lost to the editor uselessly—or returned to him, burdened with the postage. The package of No. 9, (containing the copies belonging to 19 subscribers,) for Gloucester Court House, was within a few days of two months on its journey of 82 miles—and in that time might have passed through Passamaquoddy, or New Orleans, with less delay.

Those persons who have received the first volume of the Farmers' Register, as compensation for obtaining subscribers, will be continued on the list *on the footing of subscribers* for the next volume, unless their names are directed to be withdrawn.

ACKNOWLEDGMENT OF COMMUNICATIONS.

The following articles will form part of No. 1, of vol. II—"Some account of the agriculture, soil, and products of Middle Florida"—"Materials for cordage"—"The wild onion"—"A breeding mule"—"On reaping wheat in a green state"—"Fecundity of a ewe"—"An effectual security against the bee moth" "To prevent the backs of plough horses being galled"—Communications from *S. B.* of Powhatan, and *J. K.* of Brunswick.

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ERRATUM.

In *Farming in Virginia and New York*, page 750, for "farms of the large size, if young," read "farms of the large size of yours."

Printed by Robert Ricketts,

AT THE SHELLBANKS PRESS,

Where the printing of books, pamphlets, and other jobs, can be executed promptly, and in the best style.

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ACKNOWLEDGMENT OF COMMUNICATIONS.

The following articles will form part of No. 1, of vol. II—"Some account of the agriculture, soil, and products of Middle Florida"—"Materials for cordage"—"The wild onion"—"A breeding mule"—"On reaping wheat in a green state"—"Fecundity of a ewe"—"An effectual security against the bee moth" "To prevent the backs of plough horses being galled"—Communications from *S. B.* of Powhatan, and *J. K.* of Brunswick.

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In *Farming in Virginia and New York*, page 750, for "farms of the large size, if young," read "farms of the large size of yours."

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